Cape Cod Canal Transportation Study, 7th Working Group Meeting.

Bourne, Plymouth, Sandwich, Wareham.

Bourne Public Library

January 26, 2017 4:00 PM to 6:00 PM

Agenda.

- Welcome and Introductions.
- Study Process & Framework.
- Study Framework: Goals and Objectives.
- Alternatives Development.
- Schedule/Next Steps.

Welcome and Introductions.

- MassDOT:
 - Ethan Britland – Project Manager.
- US Army Corps of Engineers.
 - Craig Martin, Project Manager.
- Study Team:
 - Bill Reed, P.E., Principal in Charge (Stantec).
 - Mike Paiewonsky, AICP- Team Project Manager (Stantec).
 - Fred Moseley, P.E.–Transportation Engineer (Stantec).
 - Jennifer Siciliano, AICP – Public Engagement (Harriman).
 - Sudhir Murthy, P.E., PTOE–Trans. Modeler (TrafInfo).
 - Frank Mahady – Socio-Economic (FXM Associates).

Study Process and Framework.

- **Step 1:** Goals and Objectives, Evaluation Criteria, and Public Involvement Plan.
- **Step 2:** Existing Conditions, Future Conditions, and Issues Evaluation.
- **Step 3:** Alternatives Development.
- **Step 4:** Alternatives Analysis.
- **Step 5:** Recommendations.

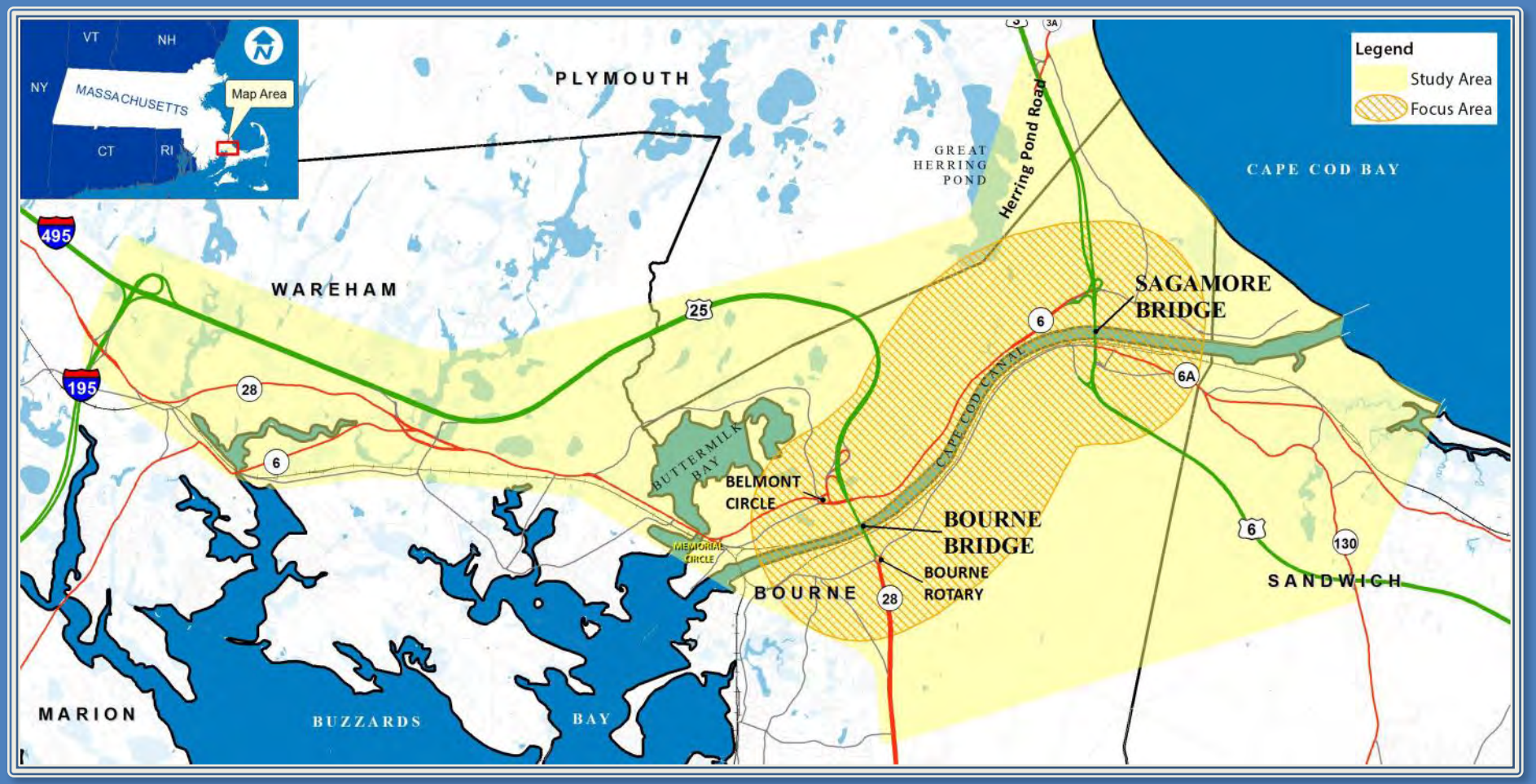
Study Framework Goals (Update).

- **Prior Goal:** To establish an alternative or replacement crossing of the Cape Cod Canal to address the diminishing quality and reliability of year-round connectivity over the Canal due to the aging Sagamore and Bourne Bridges.
- **Updated Goal:** Improve transportation mobility and accessibility in the Cape Cod Canal Area, and to provide reliable year-round connectivity over the canal and between the Sagamore and Bourne Bridges.
- To create/improve multi-modal mobility in the Cape Cod Canal area.

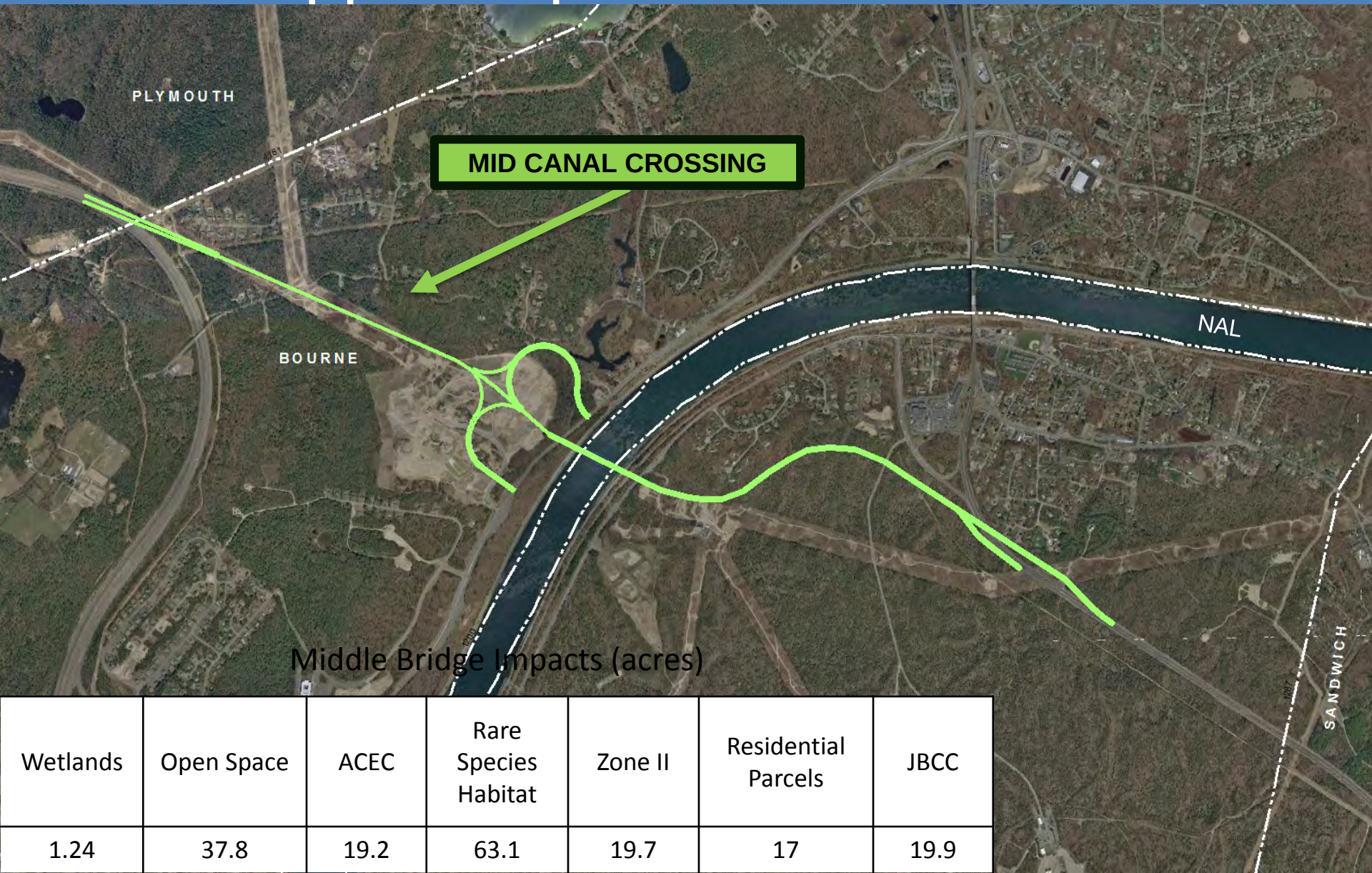
Study Framework: Objectives.

- Create reliable multimodal connectivity and mobility levels such that the quality of life on Cape Cod is not diminished by unreliable connectivity across the Cape Cod Canal.
- Create a reliable multimodal connection across the Cape Cod Canal to maintain/enhance public safety in the event of the need for an emergency evacuation of portions of Cape Cod and to accommodate first responders accessing Cape Cod.
- Ensure that cross canal connectivity does not become a barrier to reliable intra-community connectivity for the Towns of Bourne and Sandwich.

Study Area.


VT
NH
NY
MASSACHUSETTS
Map Area
CT
RI
PLYMOUTH
GREAT HERRING POND
Herring Pond Road
CAPE COD BAY
Legend
Study Area
Focus Area
495
WAREHAM
25
SAGAMORE BRIDGE
6
6A
195
28
6
BUTTERMILK BAY
BELMONT CIRCLE
CAPE COD CANAL
BOURNE BRIDGE
MEMORIAL CIRCLE
BOURNE ROTARY
BOURNE
28
6
130
SANDWICH
MARION
BUZZARDS
BAY

Existing Conditions Supplement: Upper Cape Water Reserve.



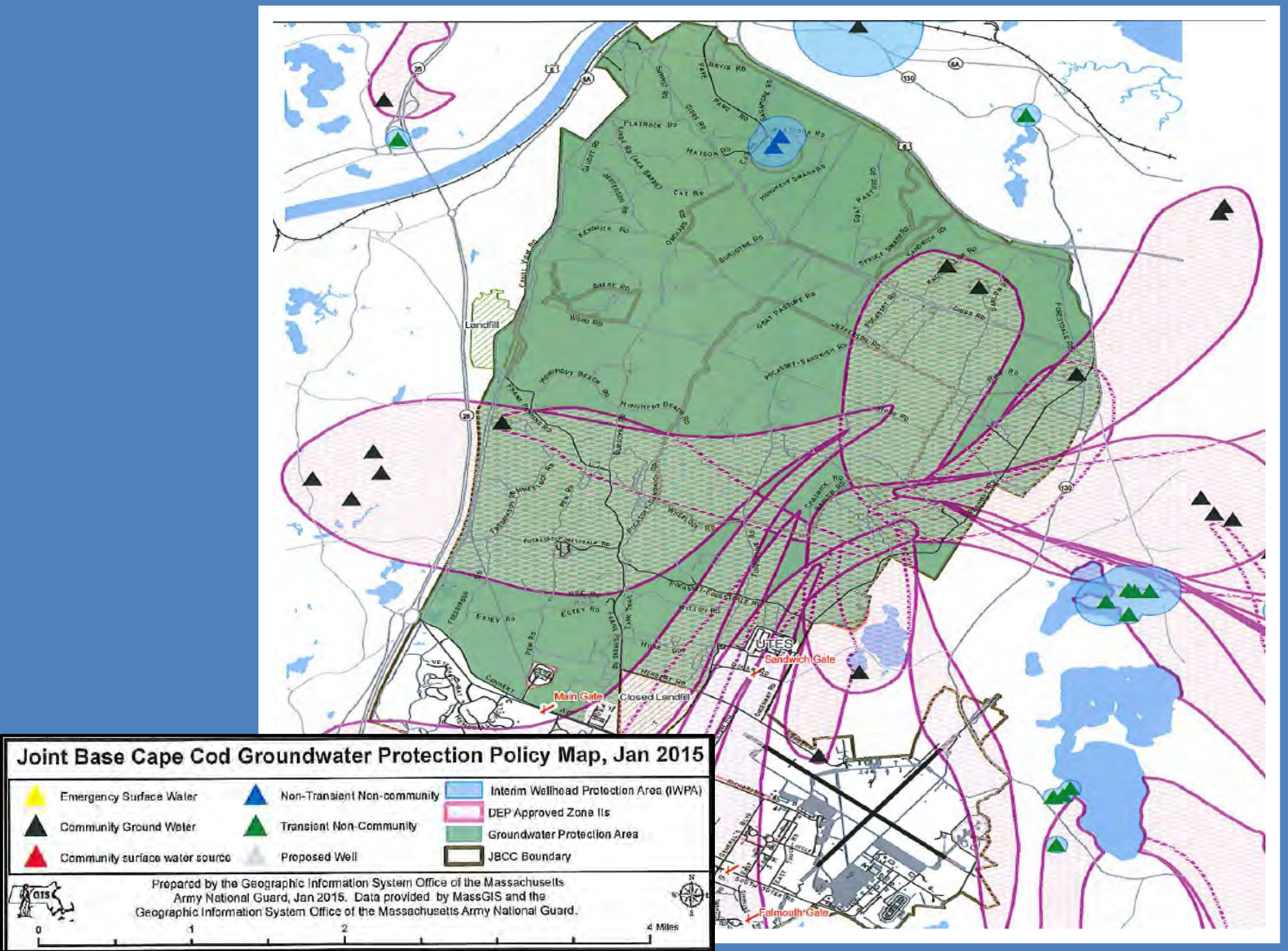
Middle Bridge Impacts (acres)

Wetlands	Open Space	ACEC	Rare Species Habitat	Zone II	Residential Parcels	JBCC
1.24	37.8	19.2	63.1	19.7	17	19.9

Upper Cape Water Supply Reserve at Joint Base Cape Cod.

- Northern 15,000 Acres of JBCC.
- Created by MA Legislature, Chapter 47, Acts of 2002.
- Owned by MA., through the Division of Fisheries & Wildlife.
- Public Conservation Land (Article 97).
- Managed through by 2015 Memorandum of Agreement (MOA).
- Managed through Environmental Management Commission (EMC) via 19 Environmental Performance Standards.

Upper Cape Water Supply Reserve at Joint Base Cape Cod.



Upper Cape Water Supply Reserve at Joint Base Cape Cod.

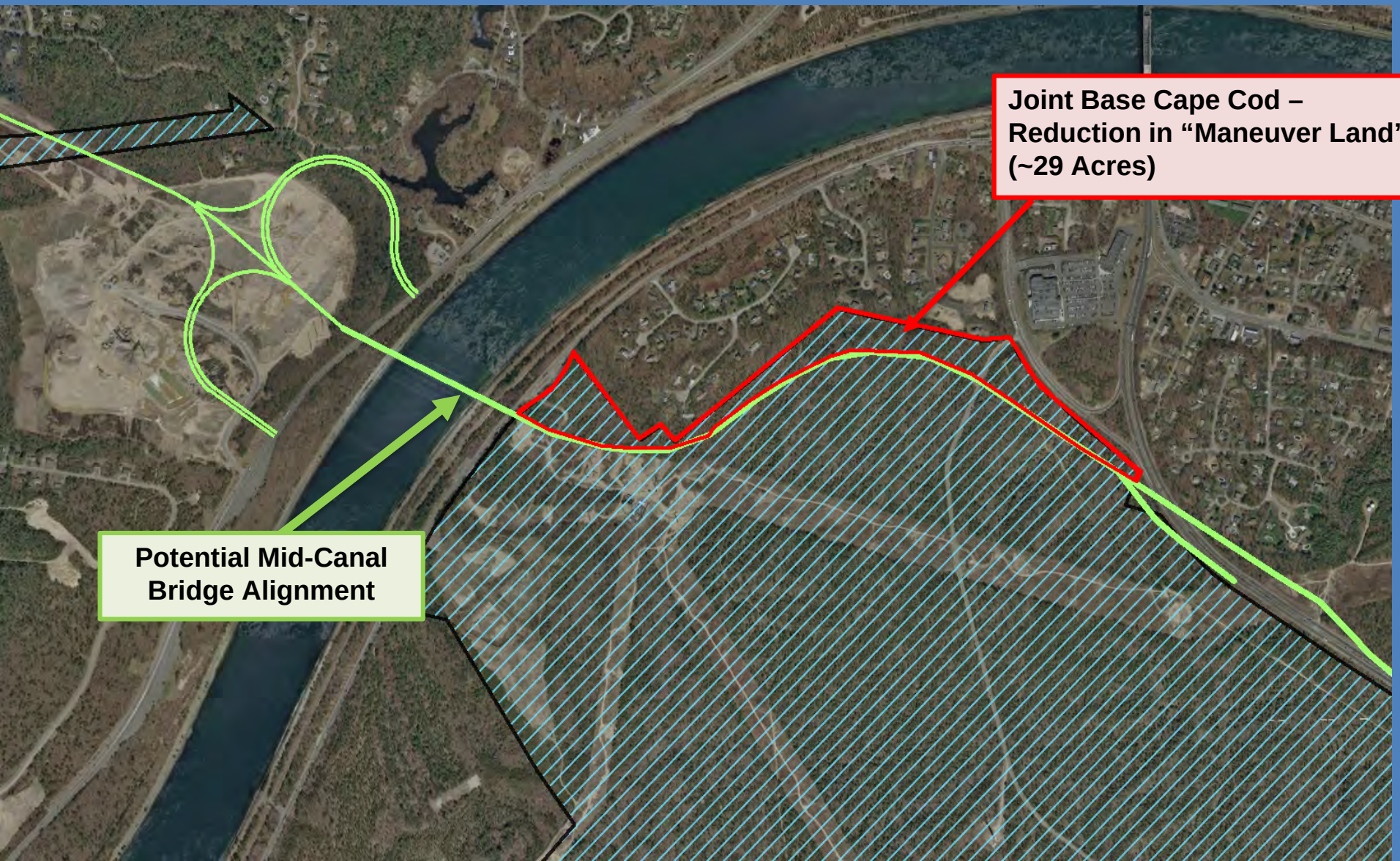
- The MOA: an enforceable legal agreement to preserve and protect the Water Supply Reserve.
- The purpose of the Reserve is water supply & wildlife protection & use and training of Mass. military forces.



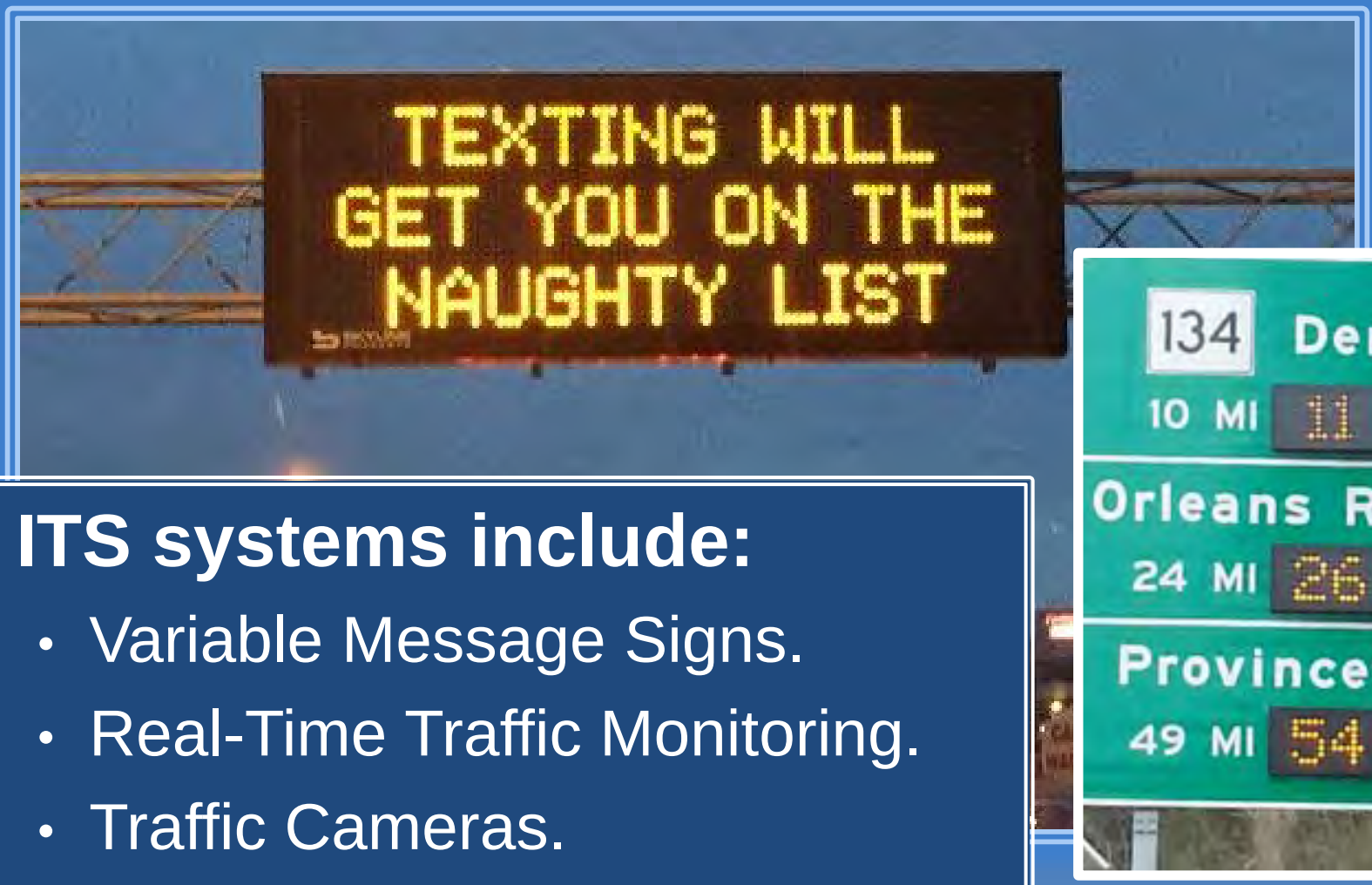
Camp Edwards – Army National Guard Training Site.

- Largest Military Training Center (MTC) in New England.
- Training within Water Supply Reserve Area.
- > 130,000 training days per year for multiple military agencies.
- Designated as a ‘Collective Training Center’, requiring >9,999 acres of ‘maneuver land’.
- Currently have 10,904 acres.
- Any use of this land for highway uses would reduce ANG’s Maneuver Land, risking their future designation as a training site.

Upper Cape Water Supply Reserve at Joint Base Cape Cod – Property Impacts.



Intelligent Transportation Systems (ITS) on Cape Cod.



- **ITS systems include:**
 - Variable Message Signs.
 - Real-Time Traffic Monitoring.
 - Traffic Cameras.

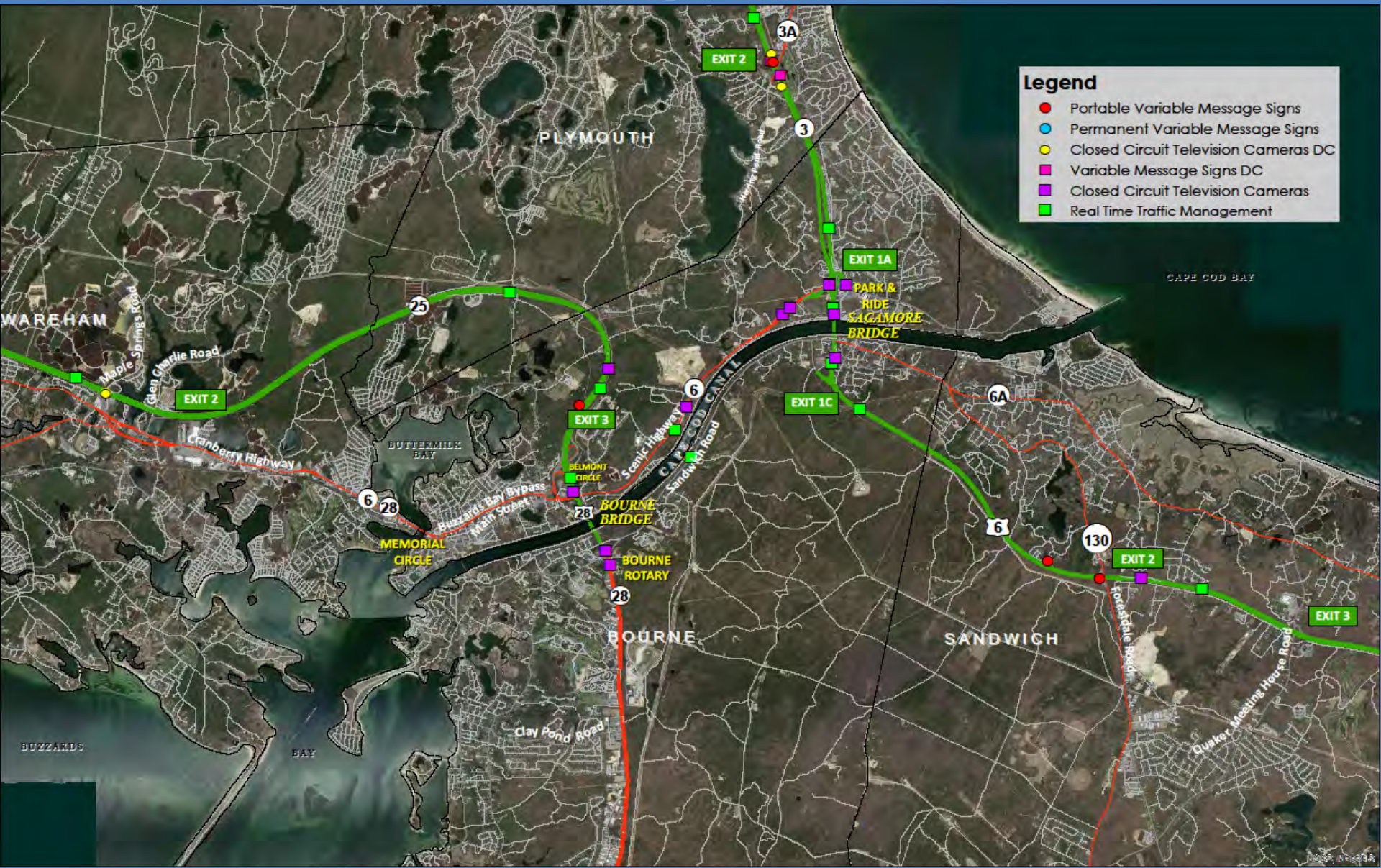
Intelligent Transportation Systems (ITS) on Cape Cod.

- **ITS systems provides information related to:**
 - Real-time traveler information.
 - Incident Management (crashes, spills).
 - Congestion Management.
 - Construction.
 - Weather-related (blizzards, hurricanes).
 - Safety information.

Intelligent Transportation Systems (ITS) on Cape Cod.

MassDOT installed $1.3M Real-Time Traffic Monitoring Signs and Message Boards on Routes 6, 25, and 28 in Bourne, Sandwich, & Barnstable in 2014.

Intelligent Transportation Systems (ITS) on Cape Cod.



Alternatives Development and Analysis.

Assumptions for Alternatives Development Process.

- Focus on year-round safety and mobility problem locations.
- Short- and Mid-Term Alternatives assume existing bridges remain and do not preclude new bridge construction.
- New bridges to be built adjacent to (inside of the) existing bridges. Toll-Free.



Design Understanding.

- Design for future (2040) fall weekday PM peak period.
- Seek further improvements for summer Saturday peak, as feasible.
- Not trying to resolve all peak-season traffic problems.

Evaluation of Alternatives - Travel Demand Model.

- Transportation Improvements will layered upon one another in order to achieve acceptable future traffic conditions.

- Selected improvements at Bourne Rotary, Belmont Circle, Exit 1C will be evaluated with existing bridges and new widened bridges.

- Travel demand model will evaluate whether the ‘transportation system’ works as desired.

Selection of Package of Alternatives.

- Ultimately, selected improvements will be based on a balance of:
 - Effectiveness.
 - Environmental Impact.
 - Community Disruption.
 - Property Impacts.
 - Cost.



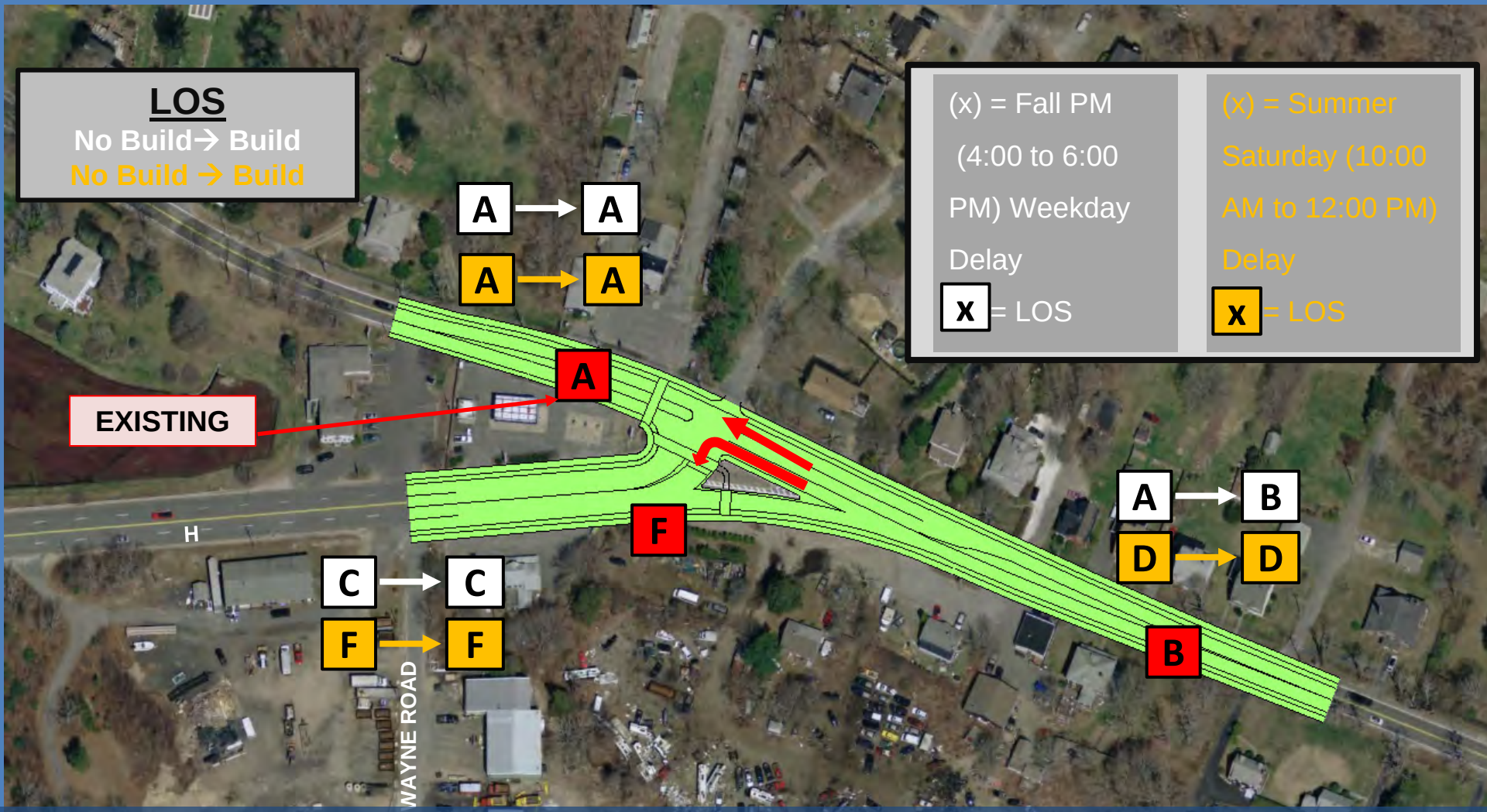
Review of Short-Term Alternatives (1-3 Years)

Few environmental or property impacts

2014 Year-Round Problem Intersections.

Location.	Work Proposed.
1. Scenic Hwy at Canal Road/ State Road, Bourne.	**Signal Optimization**
2. Route 6A at Cranberry Hwy/Sandwich Road, Bourne.	**Left-Turn Lane on Sandwich Road westbound approach.**
3. Route 130 at Cotuit Road, Sandwich.	**New Traffic Signals**
4. Sandwich Road at Bourne Rotary Connector, Bourne	**Sandwich Road Through Lane**
5. Sandwich Road at Harbor Lights Road, Bourne.	**No short-term work proposed**
6. Scenic Highway at Nightingale Pond Road, Bourne.	**Signal Optimization**
7. Belmont Circle, Bourne.	**MassDOT Bicycle/Pedestrian Improvements (TIP #600900)**
8. Bourne Rotary, Bourne.	**MassDOT Pavement Markings/ Guide Signs**

Location 2: Route 6A at Cranberry Highway/Sandwich Road Future 2040 Peak Periods.



Proposed: Add exclusive left-turn lanes on westbound approach. Sidewalk on Sandwich Rd. No sidewalk on Cranberry Hwy.

Location 2: Route 6A/Cranberry Hwy - Potential Environmental Impact.



Location 3: Route 130 at Cotuit Road, Sandwich Future 2040 Peak Periods.

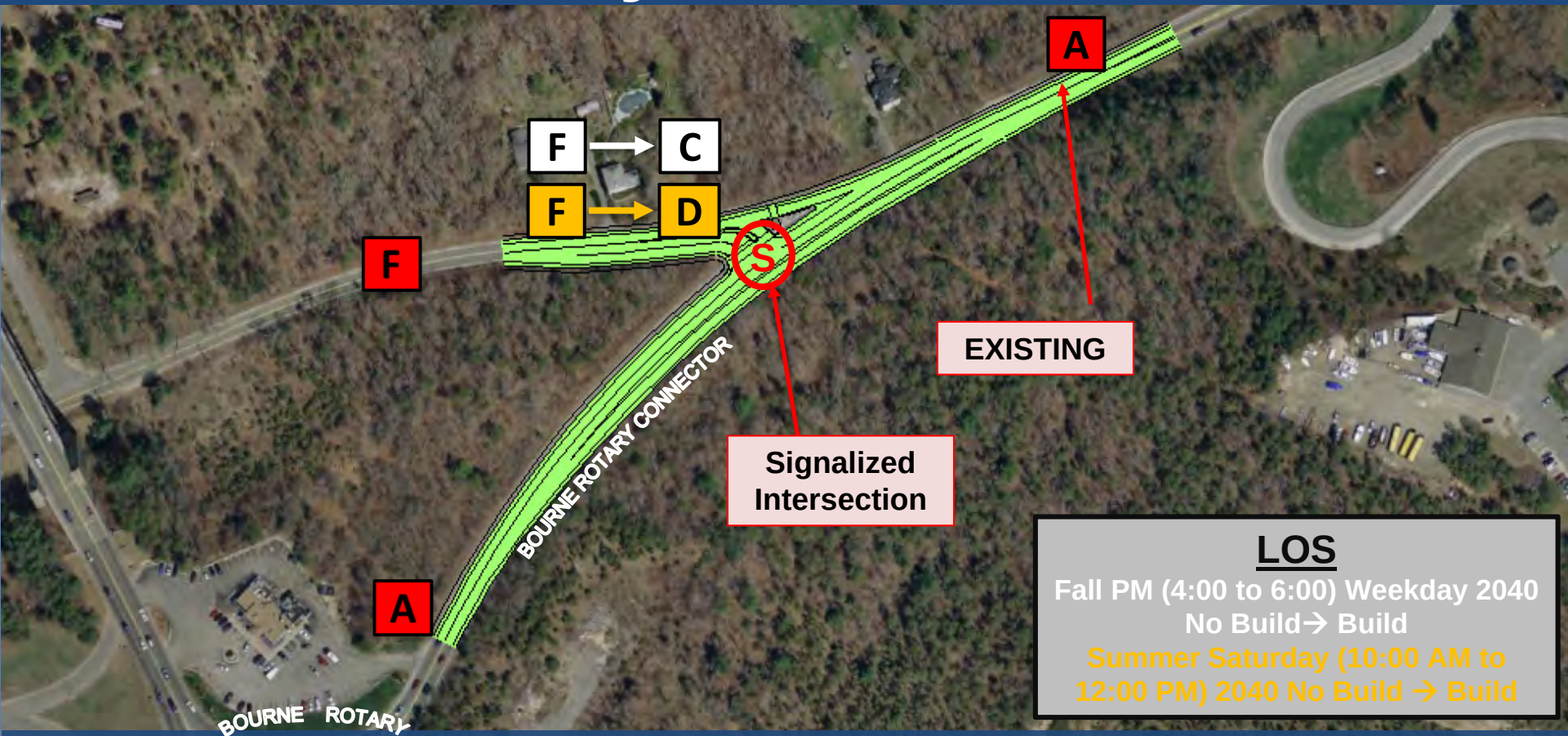


Proposed: Signalized Intersection. Add sidewalks/bike shoulders

Overall Delay: Reduced from 39 to 12 Seconds. (2040 Fall PM)

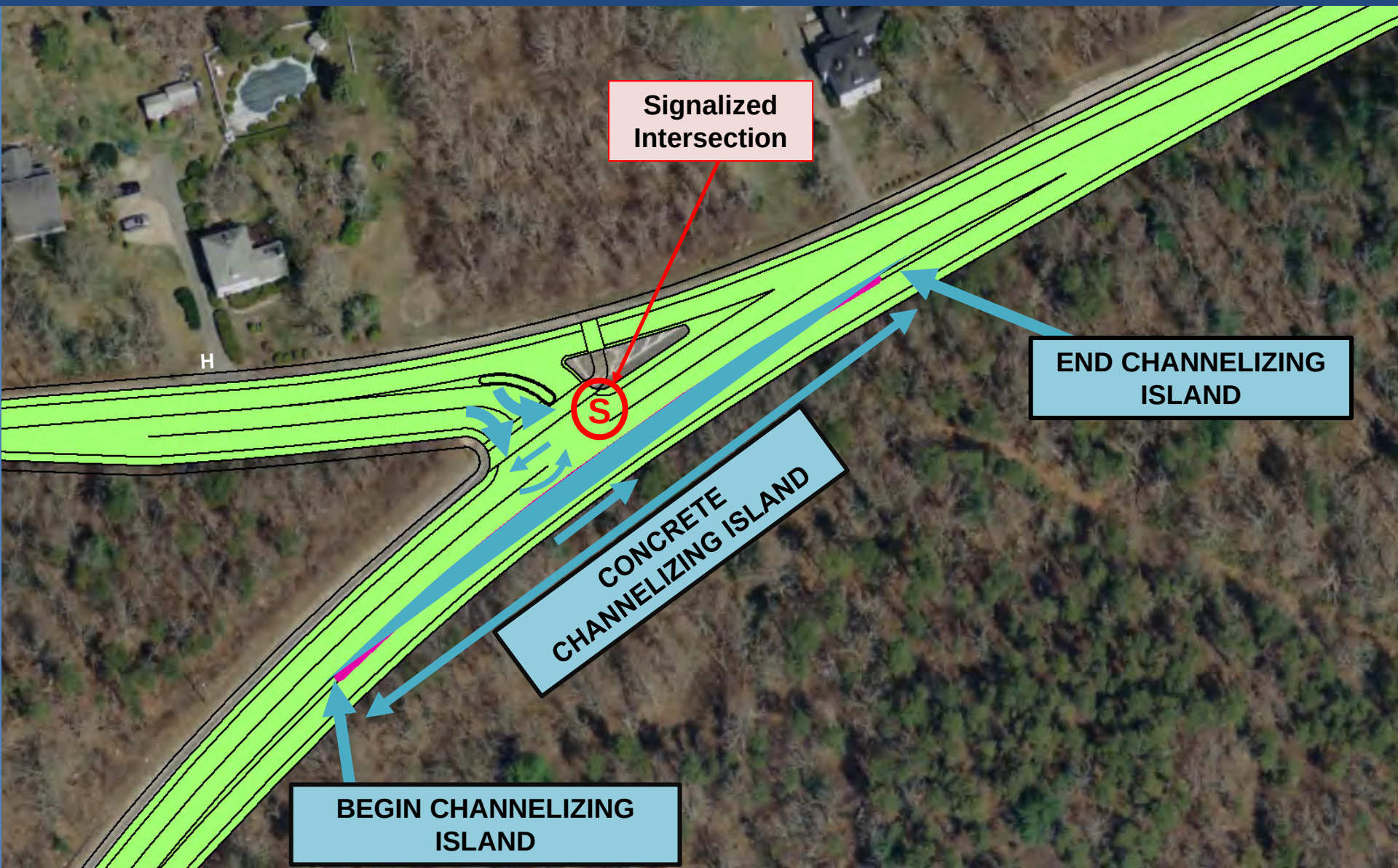
No Environmental or Property Impact

Location 4: Sandwich Road at Bourne Rotary Connector, Bourne.



Proposed: Signalized Intersection with Direct Access from Bourne Rotary Connector to Sandwich Road ('Florida T-intersection').
Will ensure compatibility with Bourne Rotary Improvements.
Add sidewalks and bike shoulders

Location 4: Sandwich Rd/Bourne Rotary Connector - 'Florida T' Intersection.



Location 4: Sandwich Rd/Bourne Rotary Connector - Potential Environmental and Property Impact.



Location 2, 3, and 4: Potential Environmental and Property Impact.

	Location 2 (Rt. 6A/ Cranberry Hwy)		Location 3 (Route 130 at Cotuit Road)		Location 4 (Sandwich Rd at Bourne Rotary Connector)	
Resource Areas:						
Rare Species Habitat	0	Acres	0	Acres	0.2	Acres
Open Space (Town of Bourne)	0	Acres	0	Acres	0.02	Acres
Right of Way:						
Residential	0.02	Acres	0	Acres	0	Acres
Commercial	0.01	Acres	0	Acres	0.01	Acres



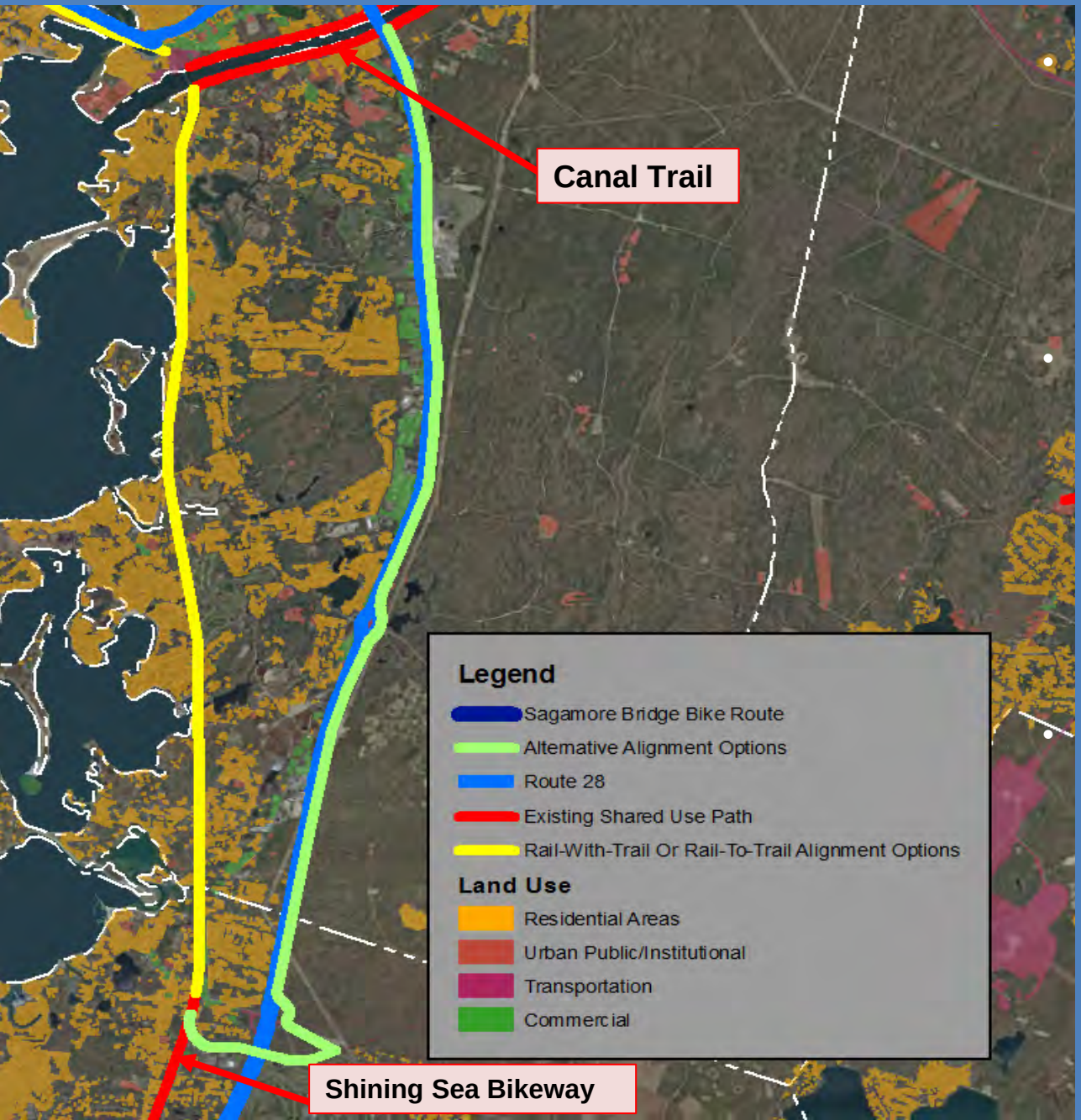
Short- and Mid-Term Multimodal Alternatives

Potential New Connections to Canal Bikeway.

- Old Bridge Road – Bourne.
- Pleasant Street – Bourne.
- Bourne Ball Field- Bourne.



Bourne Rail Trail.



Cape Cod Commission feasibility study completed October 2016

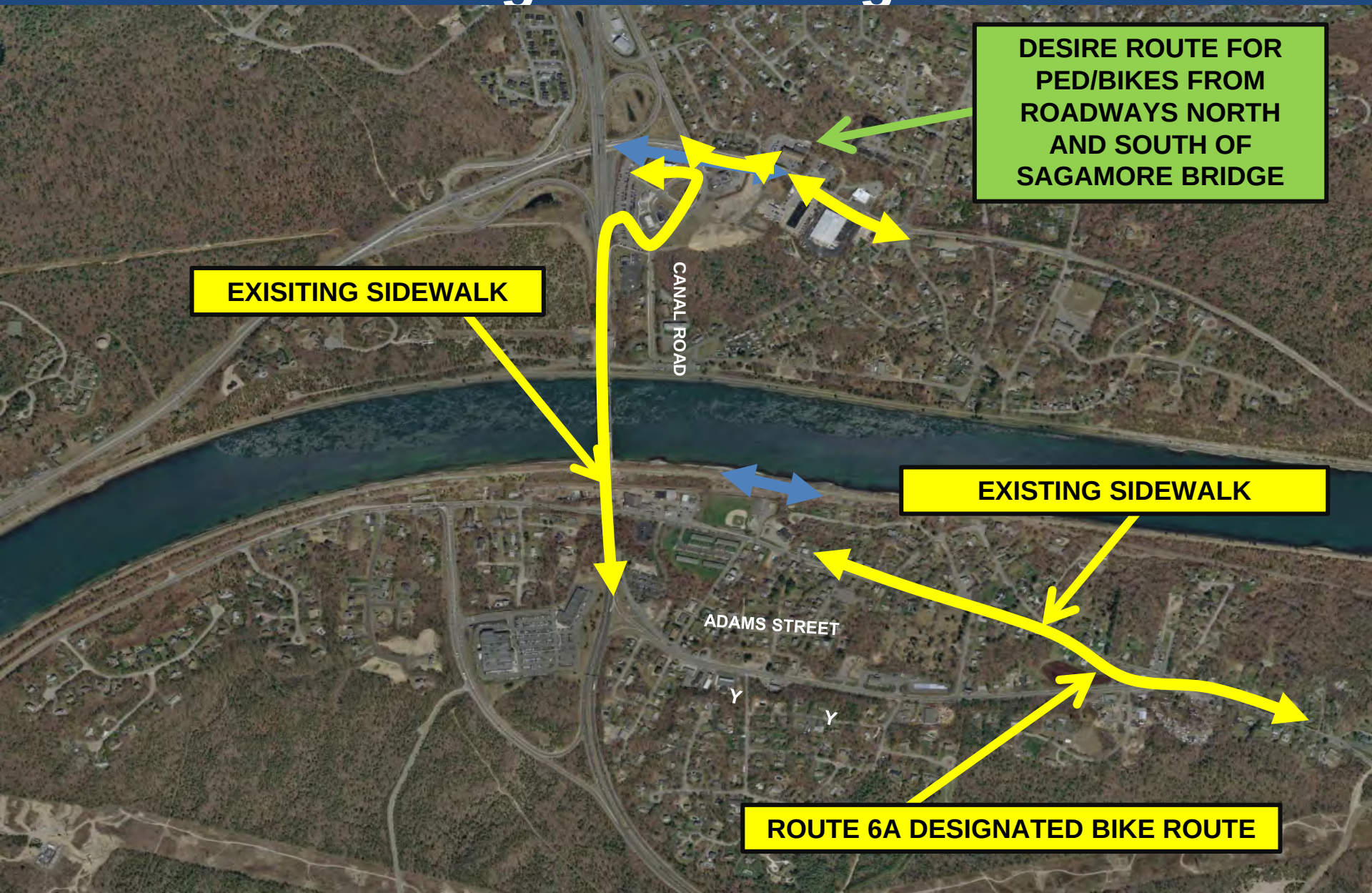
Evaluated 2 Options:

- Rail-with-Trail ($14.7M to 25.5M)
- Rail-to-Trail ($9.0M)

Other Potential Alignment

- Parallel to east side of Route 28.

Travel Path - Bike/Ped Access over Sagamore Bridge.



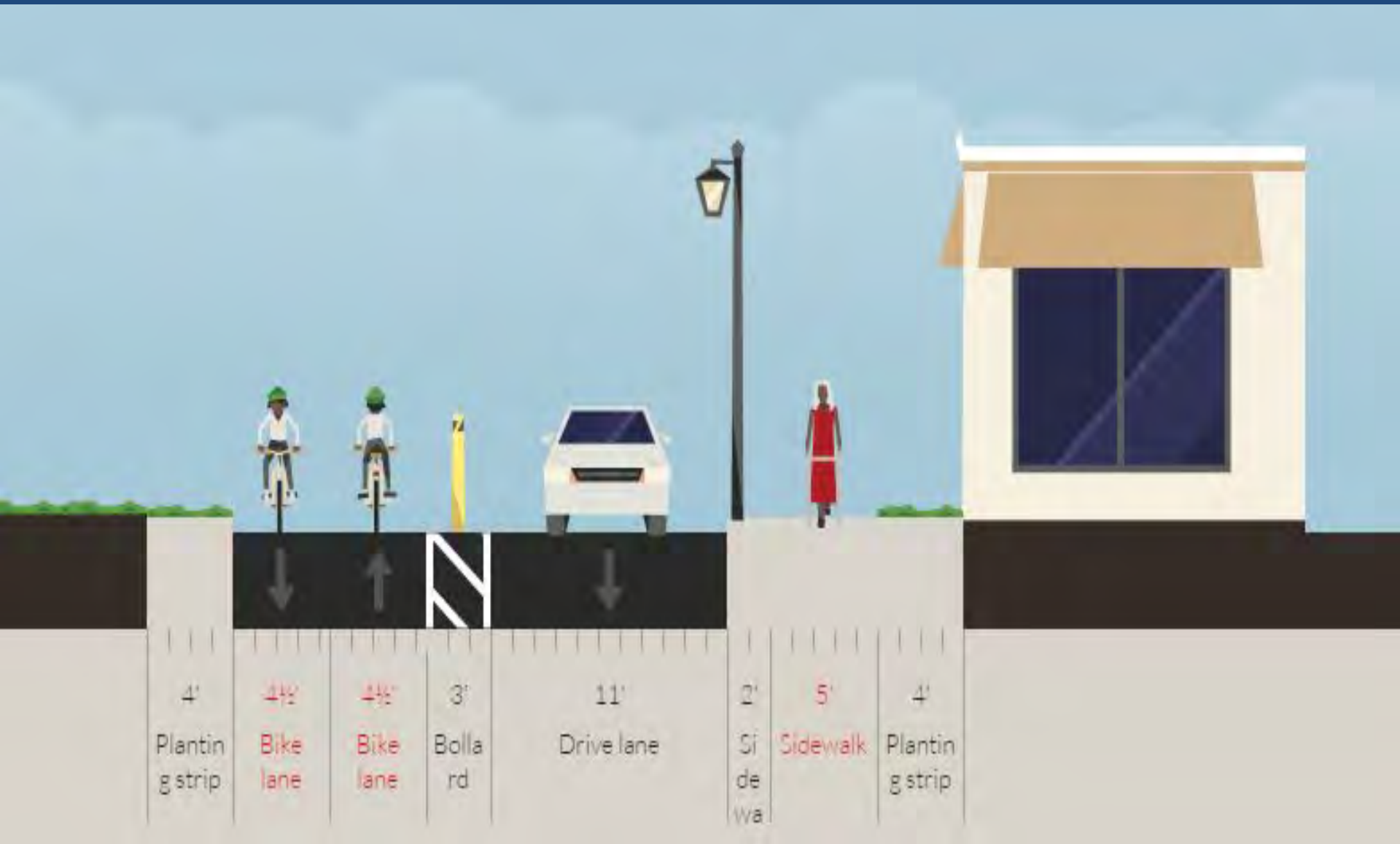
Bike/Ped Access over Sagamore Bridge (North of Canal).



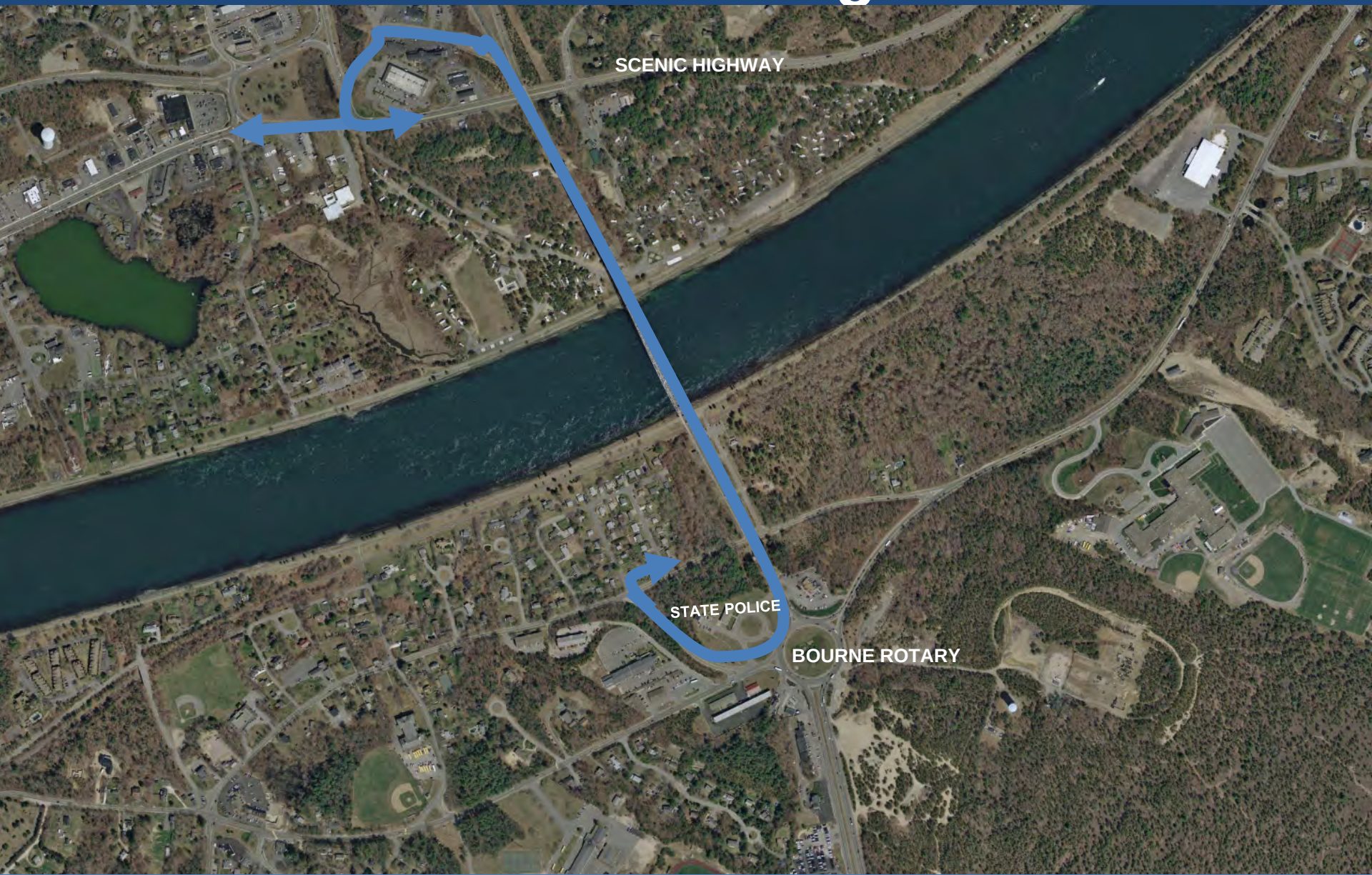
Bike/Ped Access over Sagamore Bridge (South of Canal).



Complete Streets Concept at Adams Street.



Travel Path - Bike/Ped Access over Bourne Bridge.



Bike/Ped Access over Bourne Bridge (North of Canal).



Bike/Ped Access over Bourne Bridge (South of Canal).



Park and Ride Lots



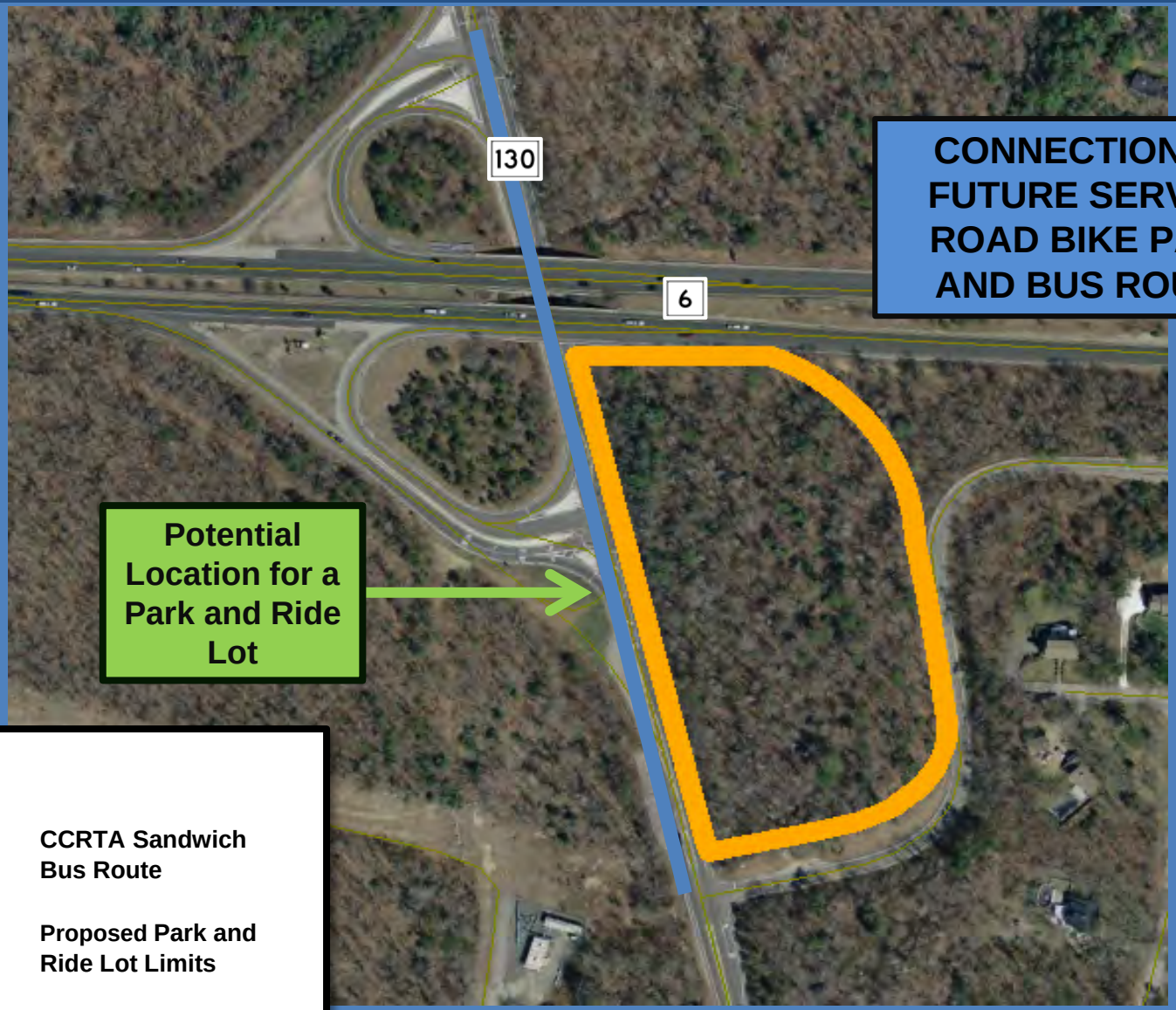
Park and Ride Lots.

- Reduce single-occupant-vehicle (SOV) travel over bridges.
- Existing Park and Ride lots on Route 6 at 90% to 100% capacity.
- Served by bus lines (P&B/CCRTA).
- Expansion of lot at Exit 6 is possible and would be beneficial.
- Route 130 (Exit 2) would provide a P&R lot between the two existing lots.

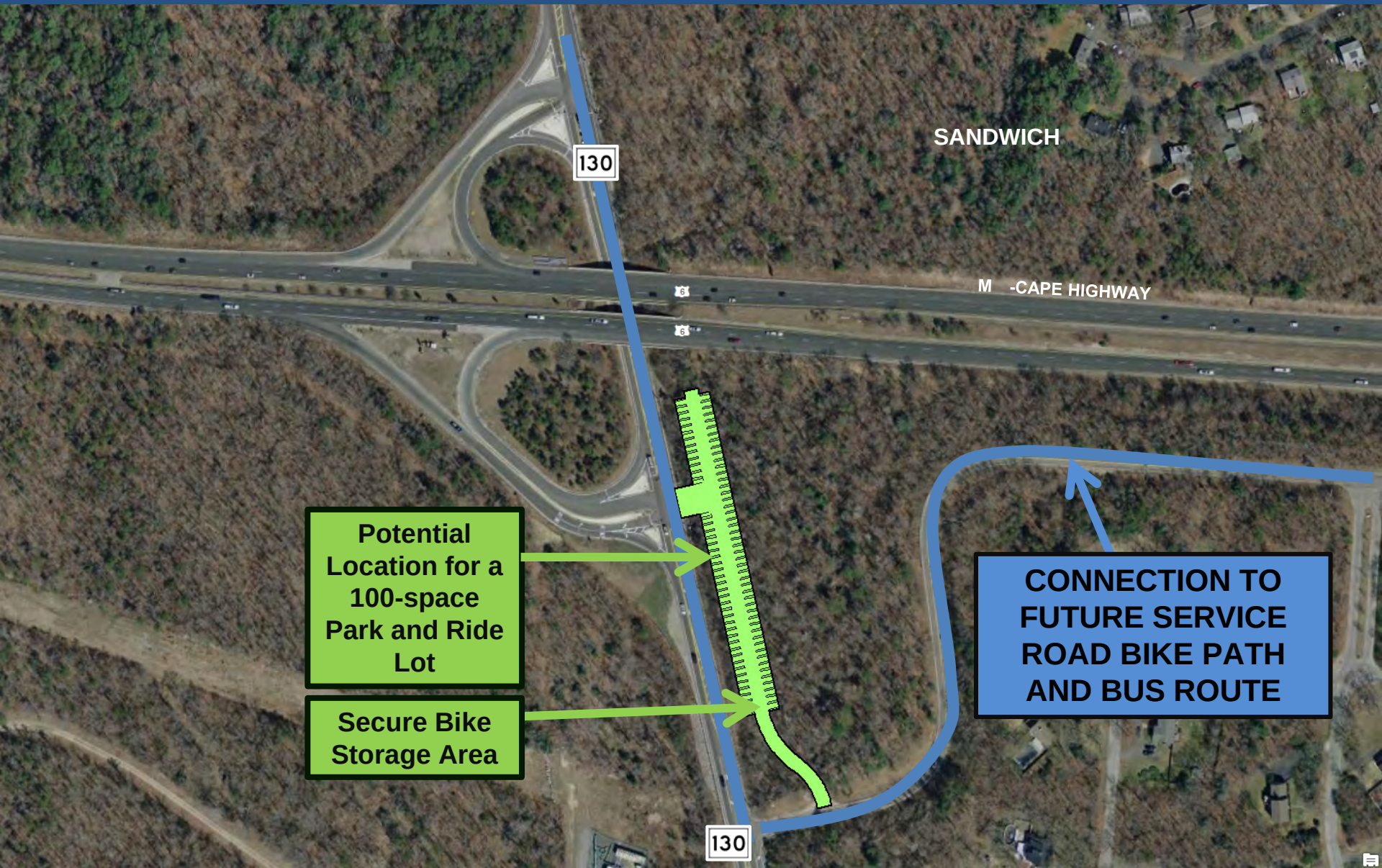
Sagamore Park and Ride License Plate Survey.

- October 2016 Mid-Week Survey
- Origin of vehicles to determine viability of Exit 2 Park and Ride Lot.
- Findings:
 - Lot was 99% Full
 - 70% of vehicles are closer to Exit 2.
- Contacting CCRTA to consider adding P&R lot to Sandwich Bus Route.
- Transferring from Sandwich Line to P&B not ideal for commuters

Potential Mid-Term – Multi-Modal Center Route 6 at Route 130 Park & Ride Lot.



Potential Mid-Term – Multi-Modal Center Route 6 at Route 130 Park & Ride Lot.





Potential Improvements To "Gateway" Locations.

Mid- to Long-Term Alternatives (3-8 or 8+ Years)

Access On & Off Cape Cod is a System.



Access System - Two Parts.

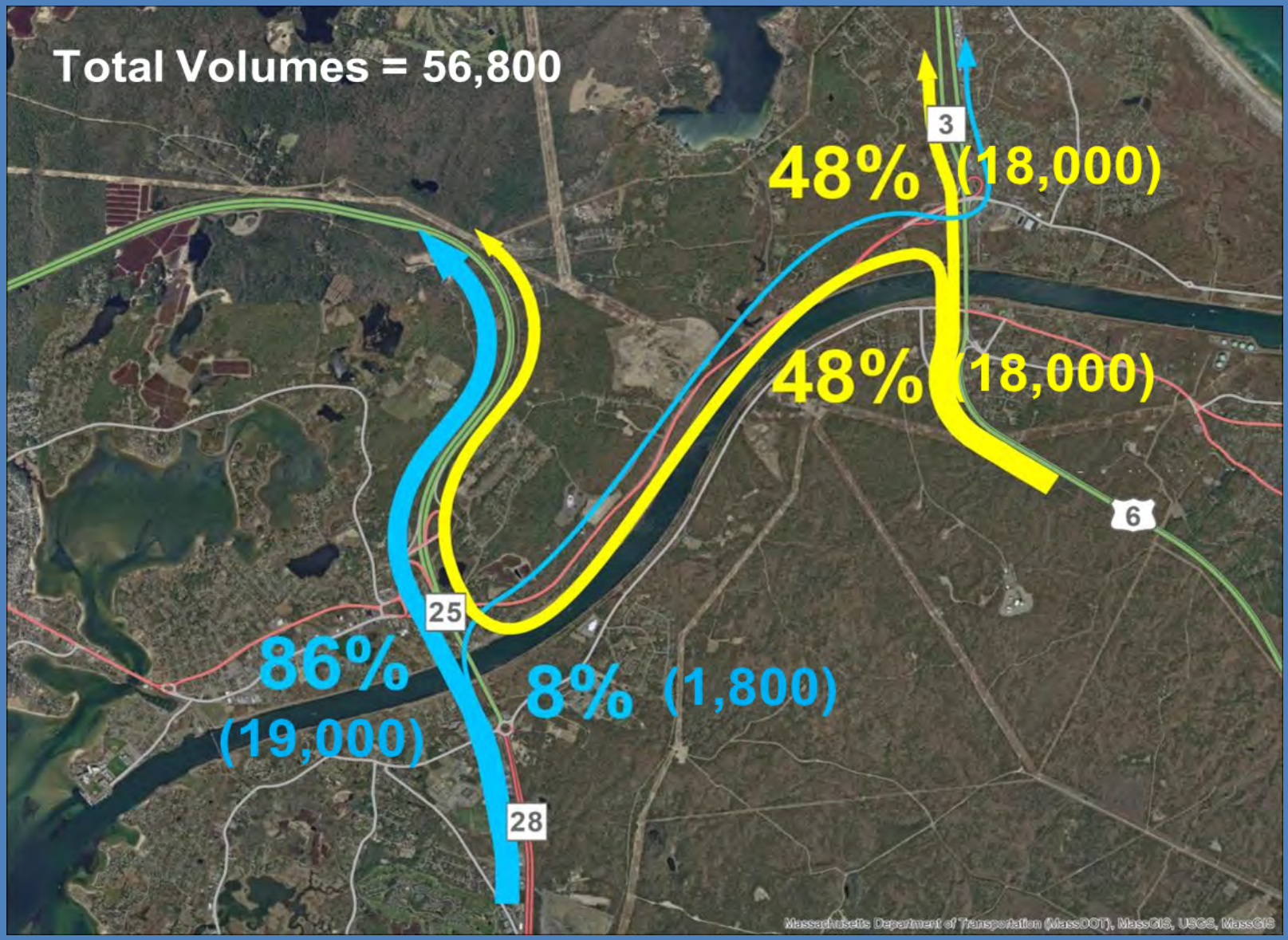
Part 1: Bridges Spanning Canal linking to Network (Responsibility of the USACE).

- Sagamore Bridge
- Bourne Bridge

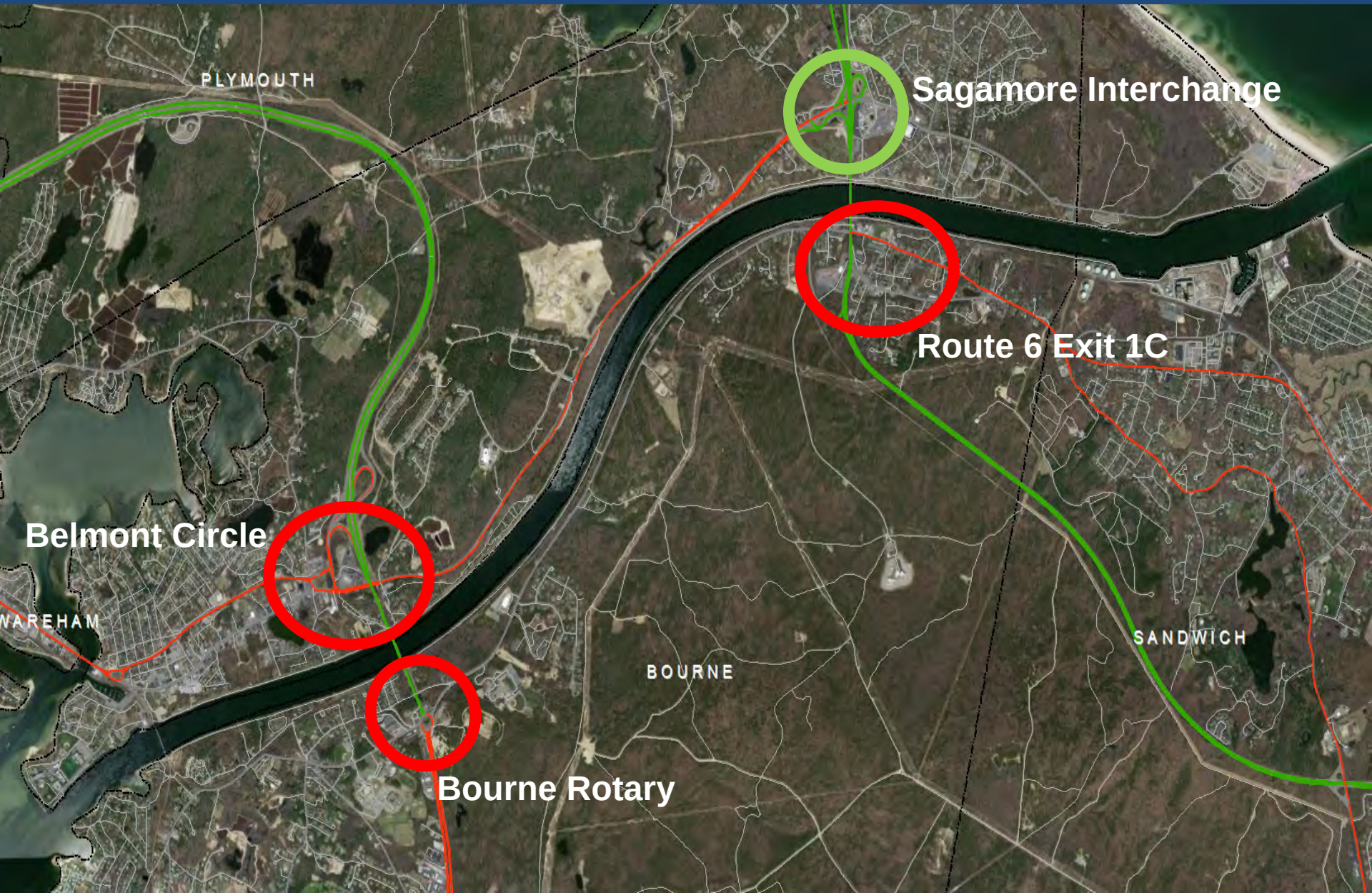
Part 2: "Gateway" Roads and intersections linking to bridges (Responsibility of MassDOT).

- Sagamore Interchange (Reconstructed in 2006)
- Route 6 at Exit 1C
- Belmont Circle
- Bourne Rotary

Access System Limitations.



Access System Limitations.



Route 6 - Exit 1C.



Problems with Existing Exit 1C Westbound Ramp.

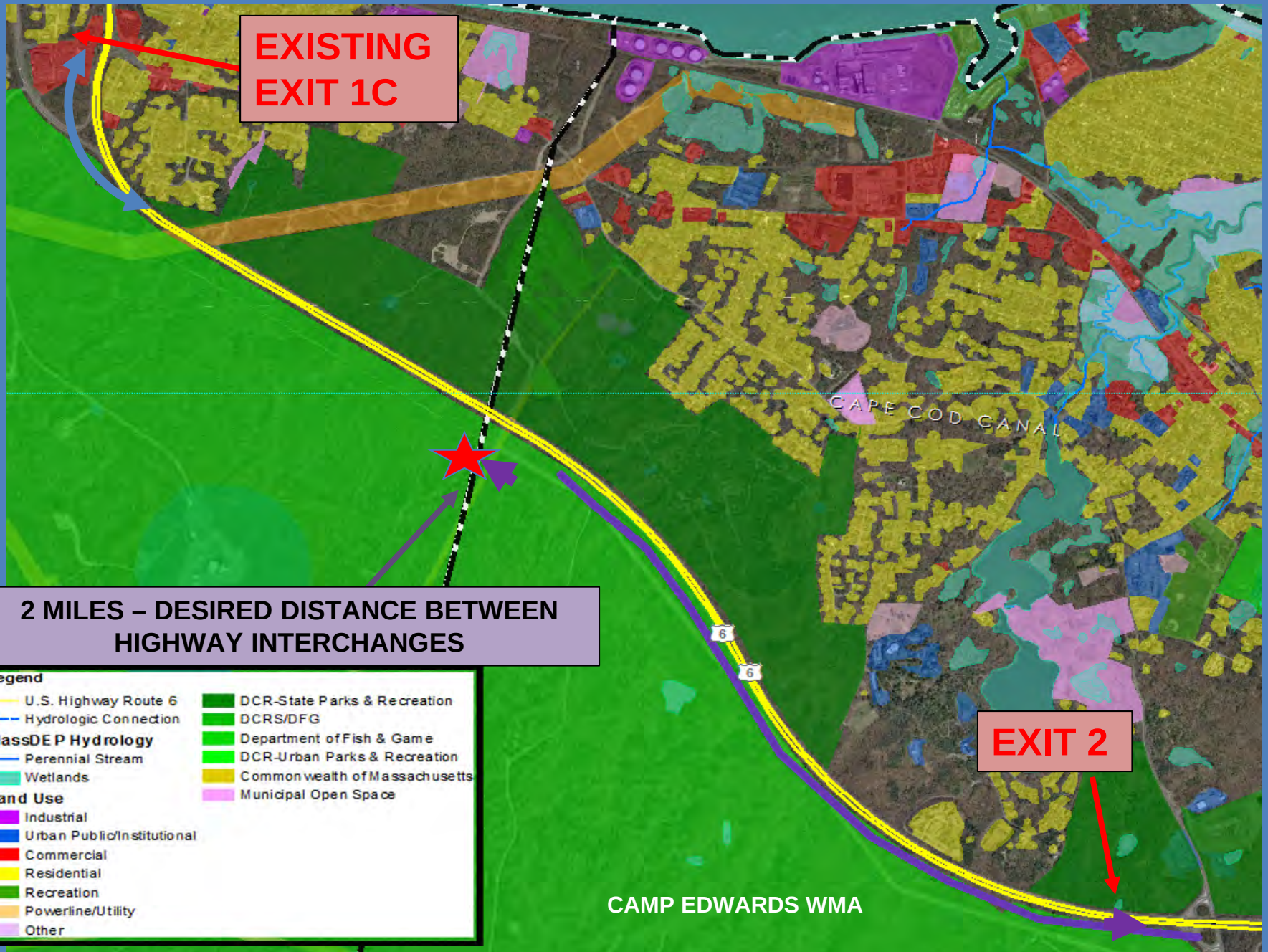
- Contributes to Route 6 westbound congestion due to:
 - Very short (<180 foot) acceleration lane immediately before Sagamore Bridge (should be 1,000 ft).
 - Steep grade onto bridge.
- Future Sagamore Bridge would likely flatten bridge grades, requiring the closure or relocation of Exit 1C to the east.



Constraints Related to the Relocation of Exit 1C.

- Need connection to roadway network.
- Joint Base Cape Cod/Upper Cape Water Reserve to the west of Route 6.
- State Forest to the east.
- Residential neighborhoods.
- Old Kings Highway Historic District

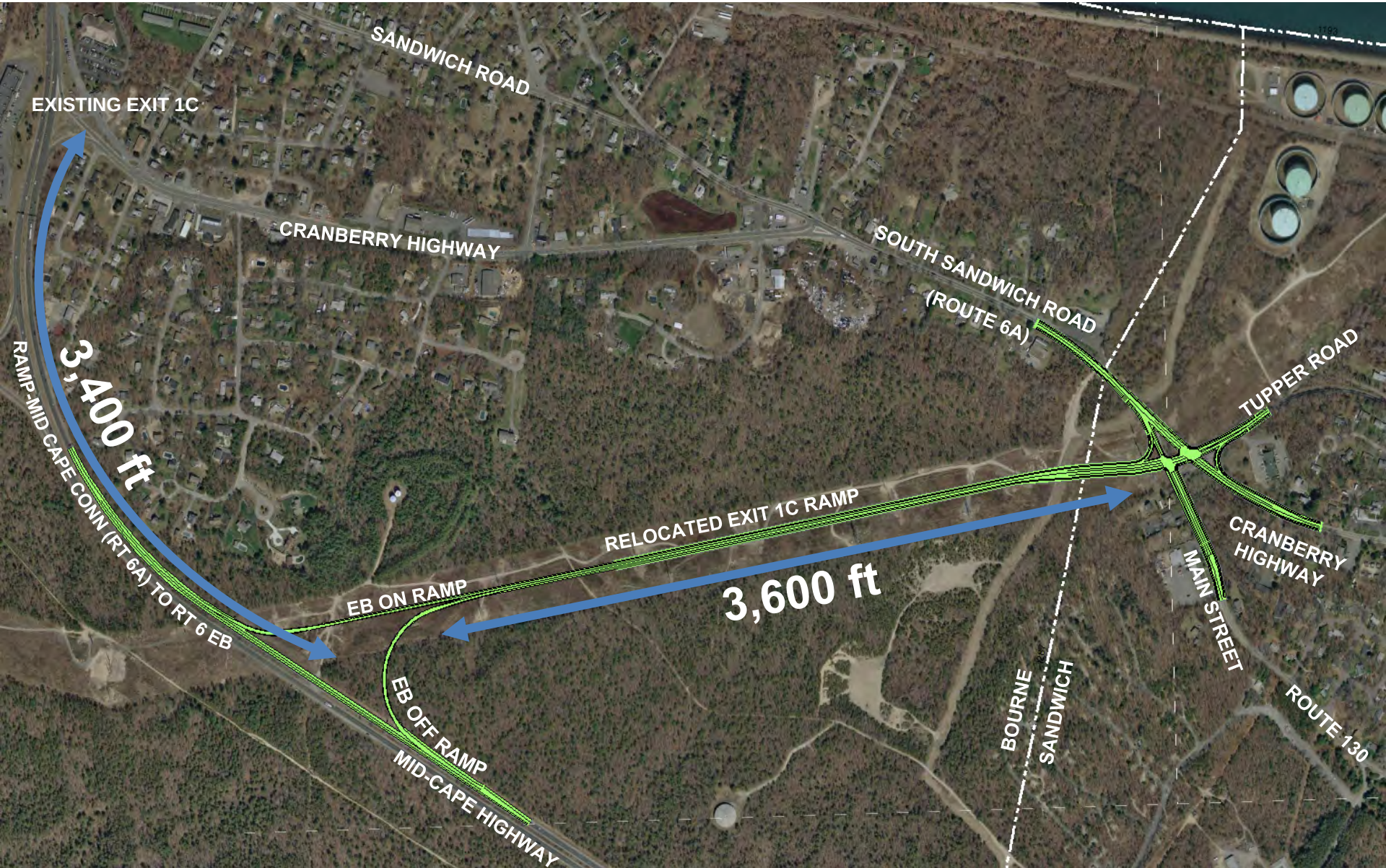
Route 6 – Existing Land Uses.



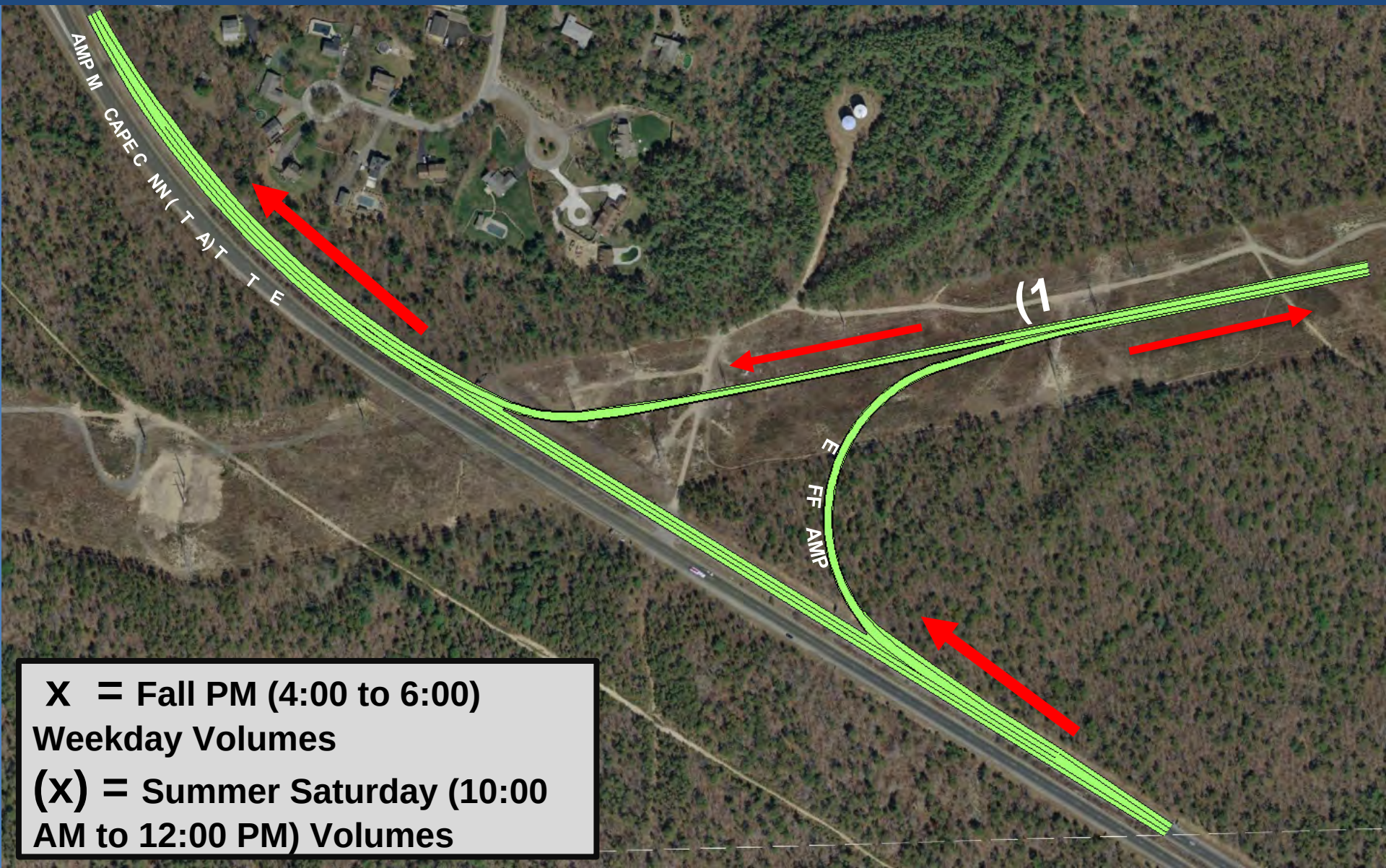
Benefits of Relocated Route 6 Exit 1C.

- New Exit 1C at utility corridor (3,400 feet east).
- New Roadway to Route 130 at Route 6A.
- Potentially reduces congestion and improves safety with longer acceleration lanes on Route 6.
- Planned to be compatible with future Sagamore Bridge.
- Potentially no adverse impact on local traffic patterns.

Relocated Route 6 - Exit 1C



Relocated Route 6 - Exit 1C
Traffic Volumes - 2040 Peak Periods.



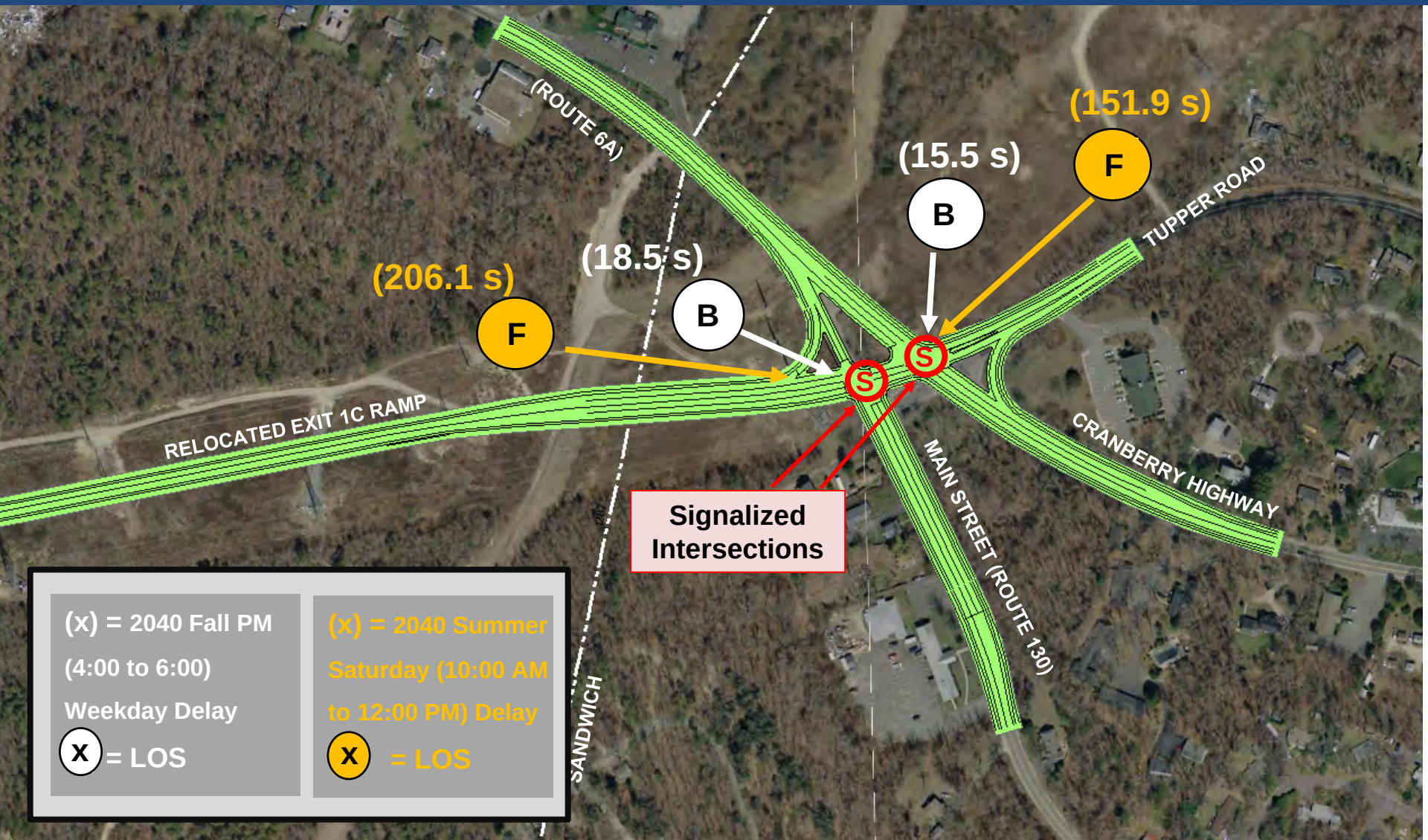
x = Fall PM (4:00 to 6:00) Weekday Volumes

(x) = Summer Saturday (10:00 AM to 12:00 PM) Volumes

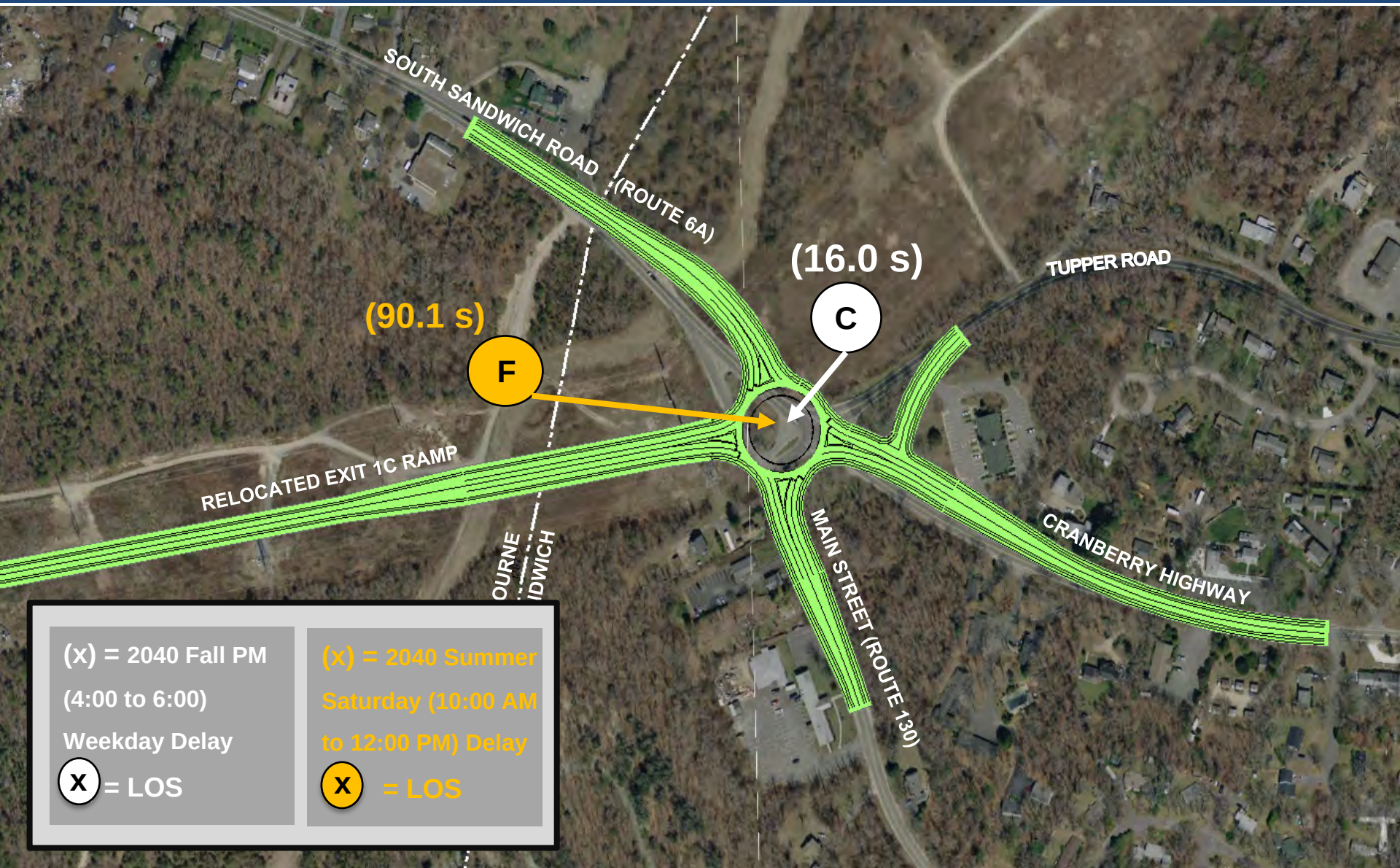
Route 6A/Route 130 Intersection
Option 1 – Signalized Intersections
2014 Existing Level of Service.



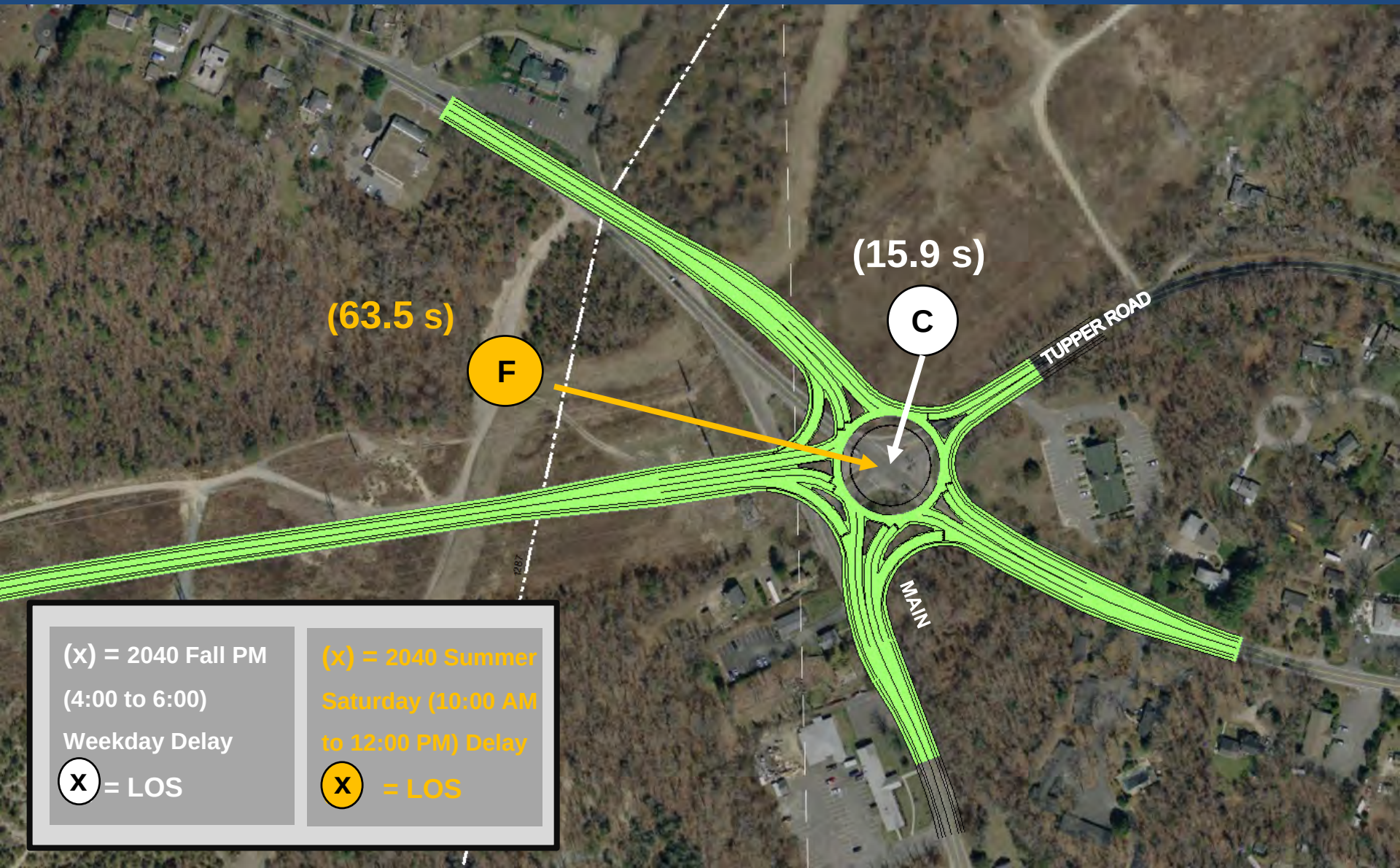
Route 6A/Route 130 Intersection
Option 1 – Signalized Intersections
Future (2040) Peak Periods.



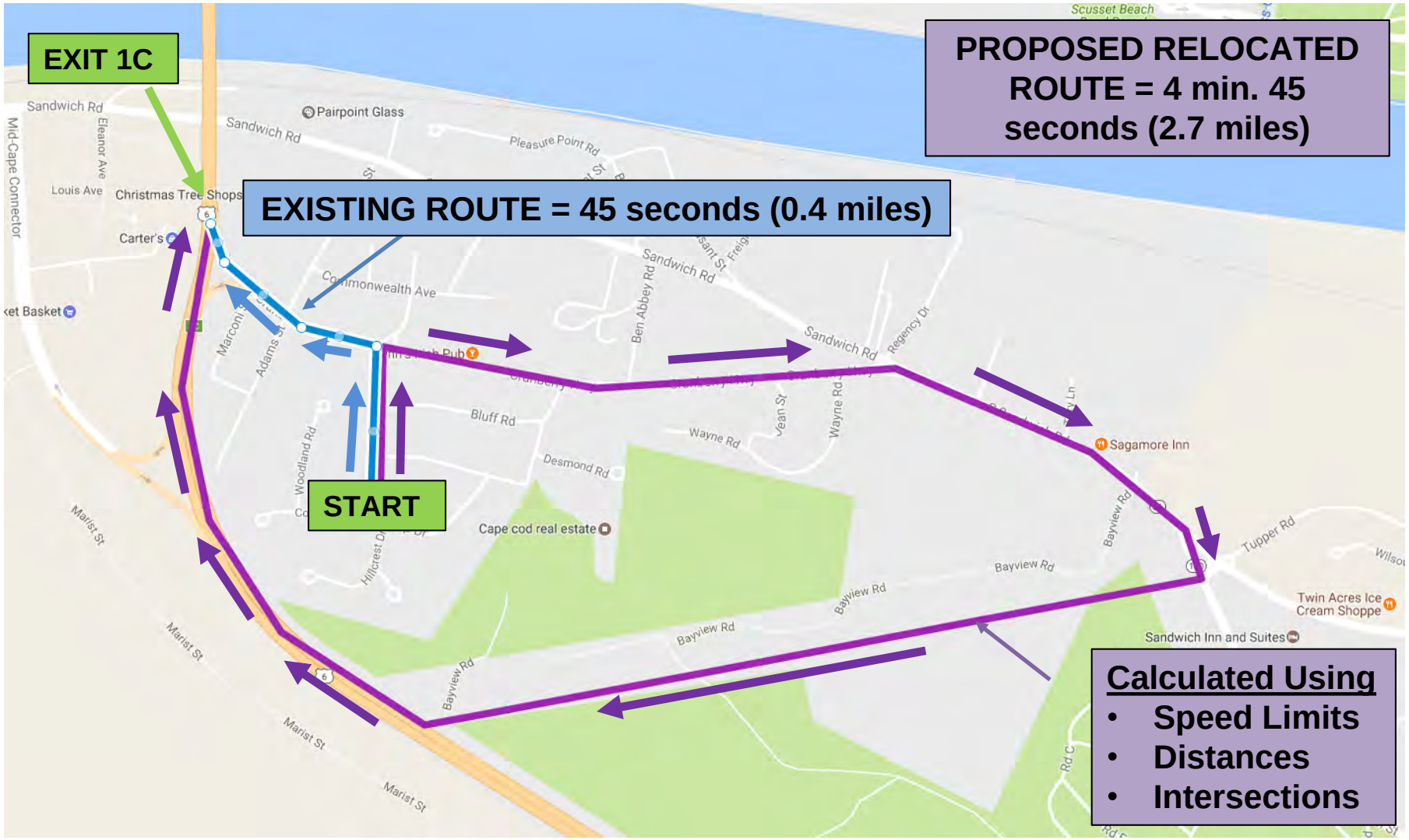
Route 6A/Route 130 Intersection Option 2 – 4 Leg Roundabout.



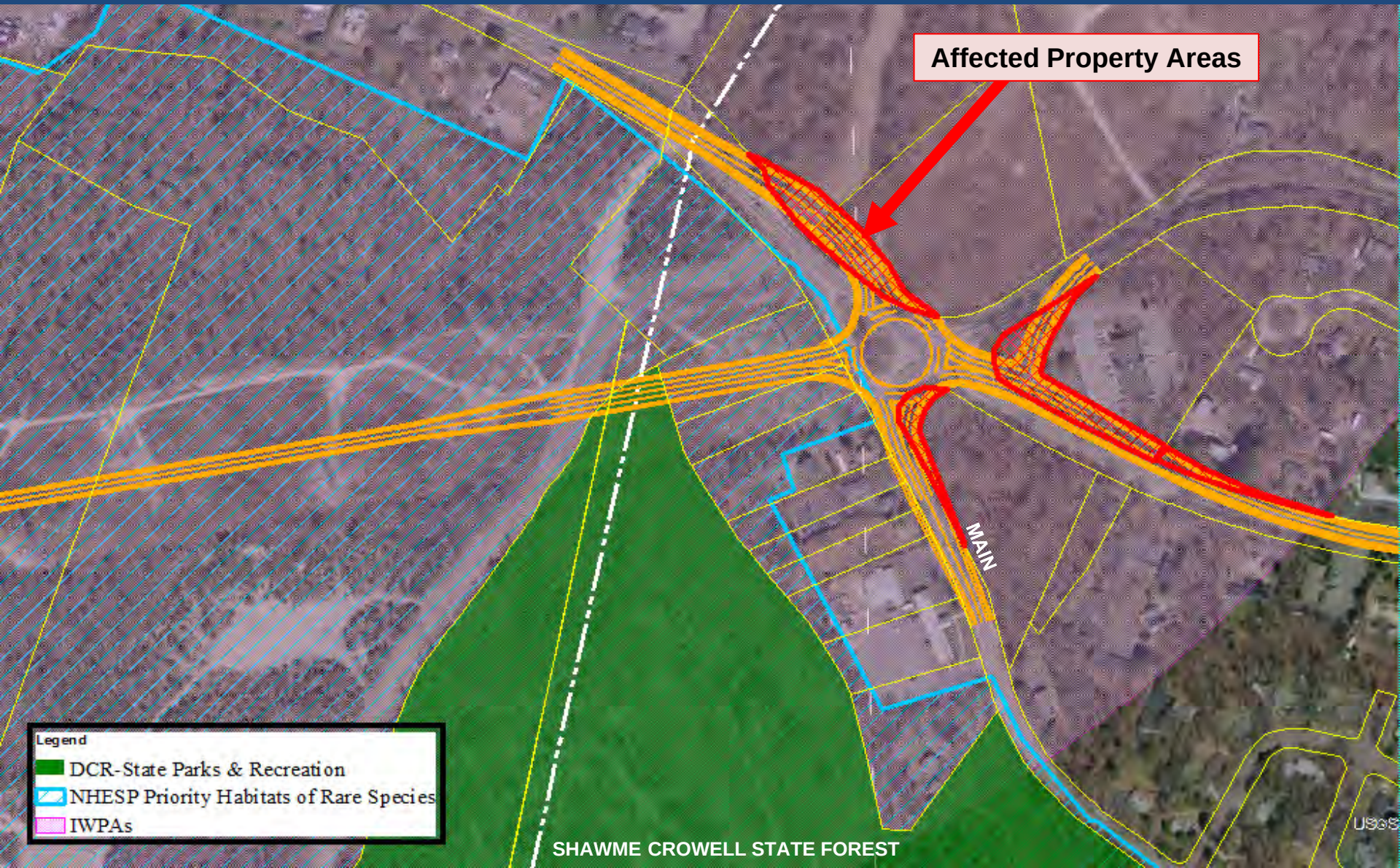
Route 6A/Route 130 Intersection Option 3 – 5 Leg Roundabout.



Effect of New Exit 1C on Off-Season Travel Times from Area Neighborhoods.



Relocated Exit 1C
Potential ROW / Environmental Impacts.



Relocated Exit 1C
Potential ROW / Environmental Impacts.



Relocated Exit 1C
Potential ROW / Environmental Impacts.

	Signalized Alternative		4-Leg Roundabout Alternative		5-Leg Roundabout Alternative	
Resource Areas:						
Rare Species Habitat	7.4	Acres	7.2	Acres	7.0	Acres
Open Space (DCR - Shawme-Crowell State Forest)	0.5	Acres	0.6	Acres	0.5	Acres
Interim Wellhead Protection Area (IWPA)	4.6	Acres	5.7	Acres	5.5	Acres
Right of Way:						
Residential	0.02	Acres	0.15	Acres	0.03	Acres
Commercial	0.02	Acres	0.9	Acres	0.26	Acres
Utility	3.5	Acres	3.8	Acres	3.8	Acres

Route 6 Exit 1C
Study Team Suggestion.

The Study Team suggest advancing:

OPTION 2 – 4 LEG ROUNDABOUT

for Travel Demand Model analysis.

Reason: Simpler design more fitting in with the community context. Acceptable traffic operations and limited property and environmental impact.

Route 6A/Route 130 Intersection
Option 2 – 4 Leg Roundabout.



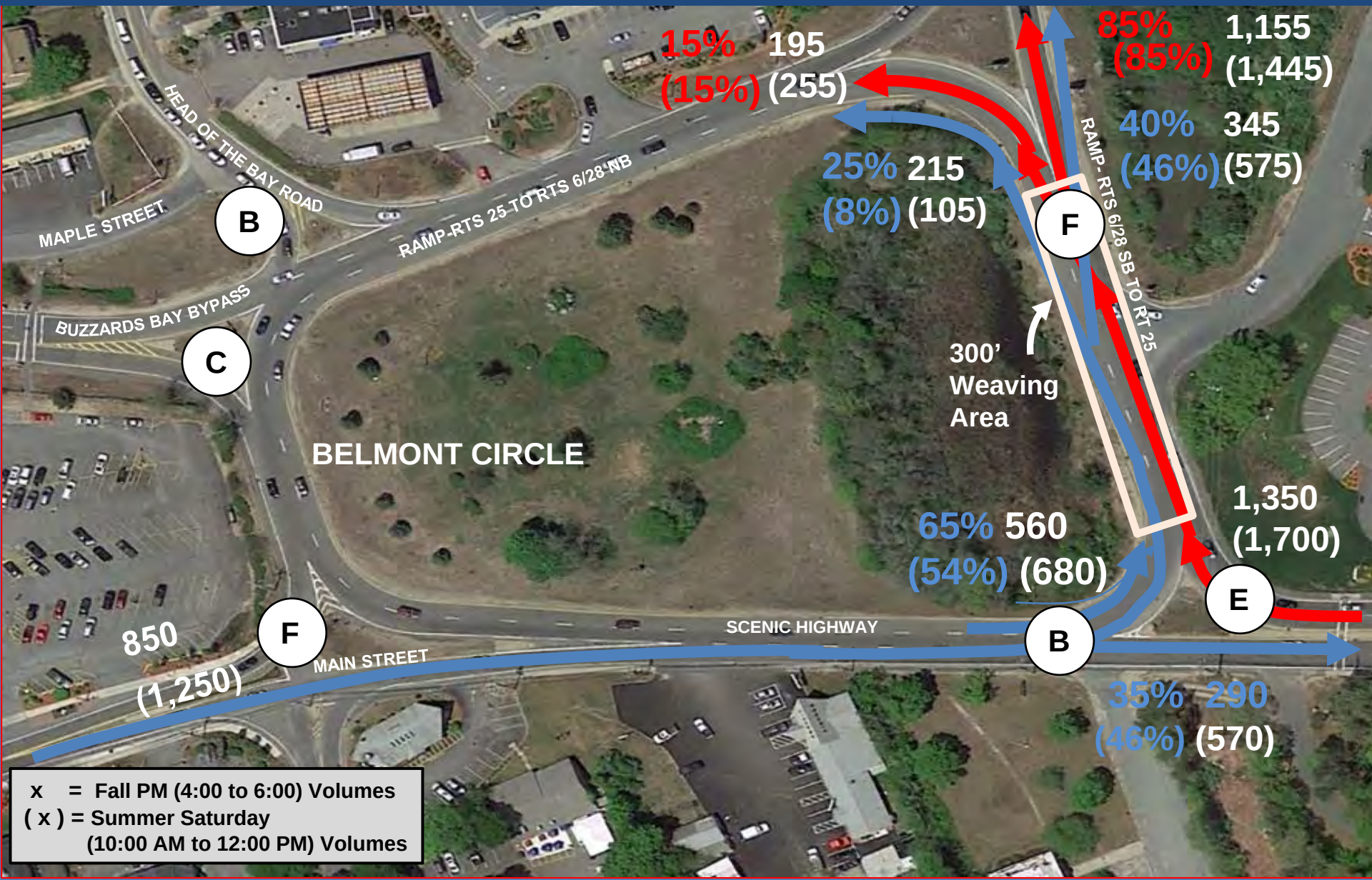
Belmont Circle.



Belmont Circle.



Belmont Circle
Traffic Weaving & Existing Peak Period LOS.



x = Fall PM (4:00 to 6:00) Volumes
(x) = Summer Saturday
(10:00 AM to 12:00 PM) Volumes

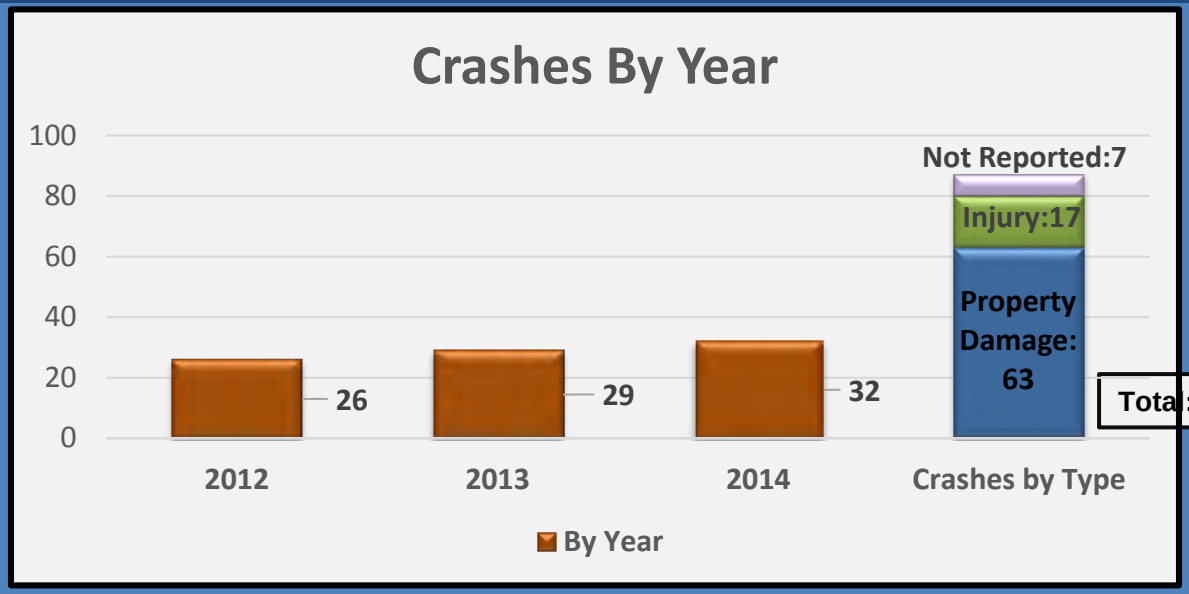
Belmont Circle
2014 Existing Peak Periods Queue Lengths

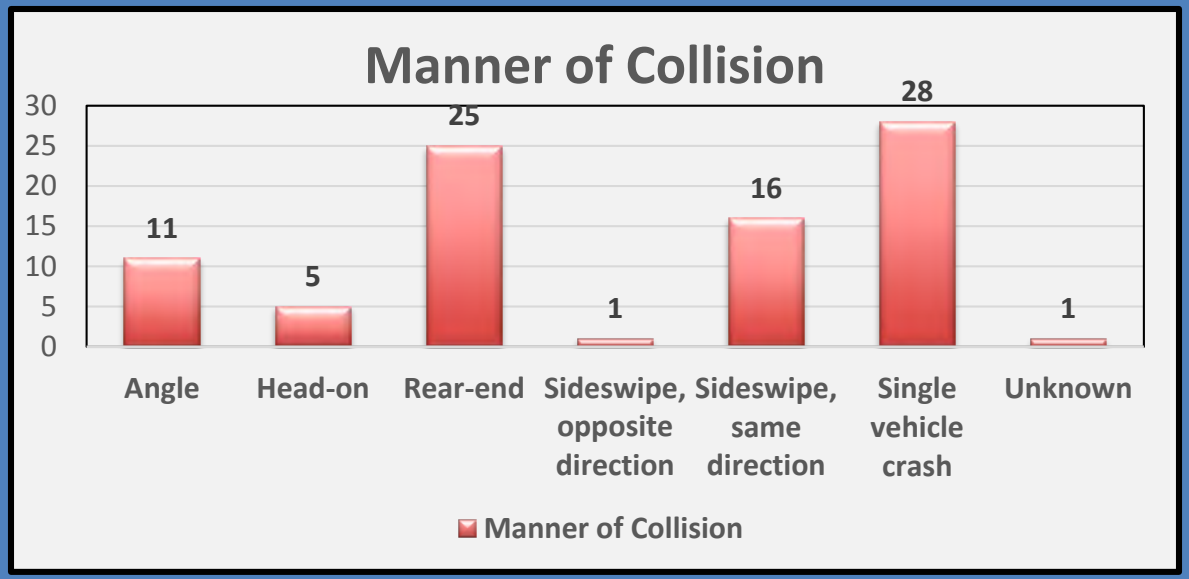


Belmont Circle
2040 Future No Build Peak Periods
Queue Lengths.



Belmont Circle Crash History.





How Proposed Alternatives may reduce crash rates:

- Reduced conflicts in rotary because substantial traffic redirected out of rotary.
- Signalized intersection will reduce crash rates.

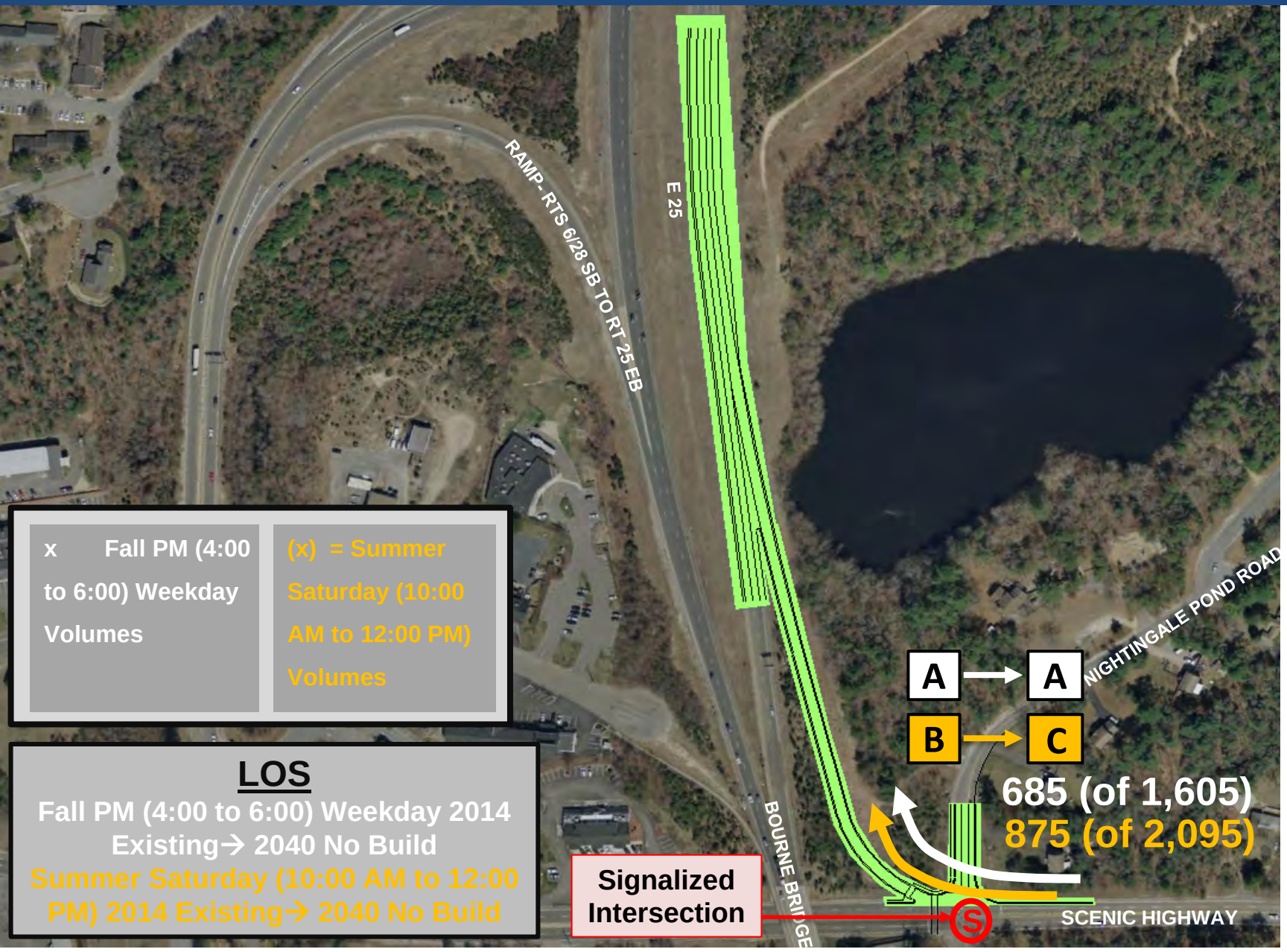
Belmont Circle – Transportation Improvement Alternatives.

- Prior studies concluded design alternatives within the Circle failed to improve traffic conditions.
- Successful alternative must balance:
 - Reducing traffic volumes entering the Circle.
 - Safely accommodating regional traffic.
 - Maintain access to local business (consider combining driveways).
 - Compatibility with future Bourne Bridge

Scenic Hwy to Route 25 Westbound Ramp.

- Diverts traffic from Belmont Circle. (685 cars in 2040 Fall PM peak period).
- Access from Scenic Hwy westbound only.
- Maintains access to adjacent residential areas.
- Potentially improves traffic operations and safety in Belmont Circle (high crash loc.).

Scenic Hwy to Route 25 Westbound Ramp. Traffic Volumes and LOS at 2040 Peak Periods.



x Fall PM (4:00 to 6:00) Weekday Volumes

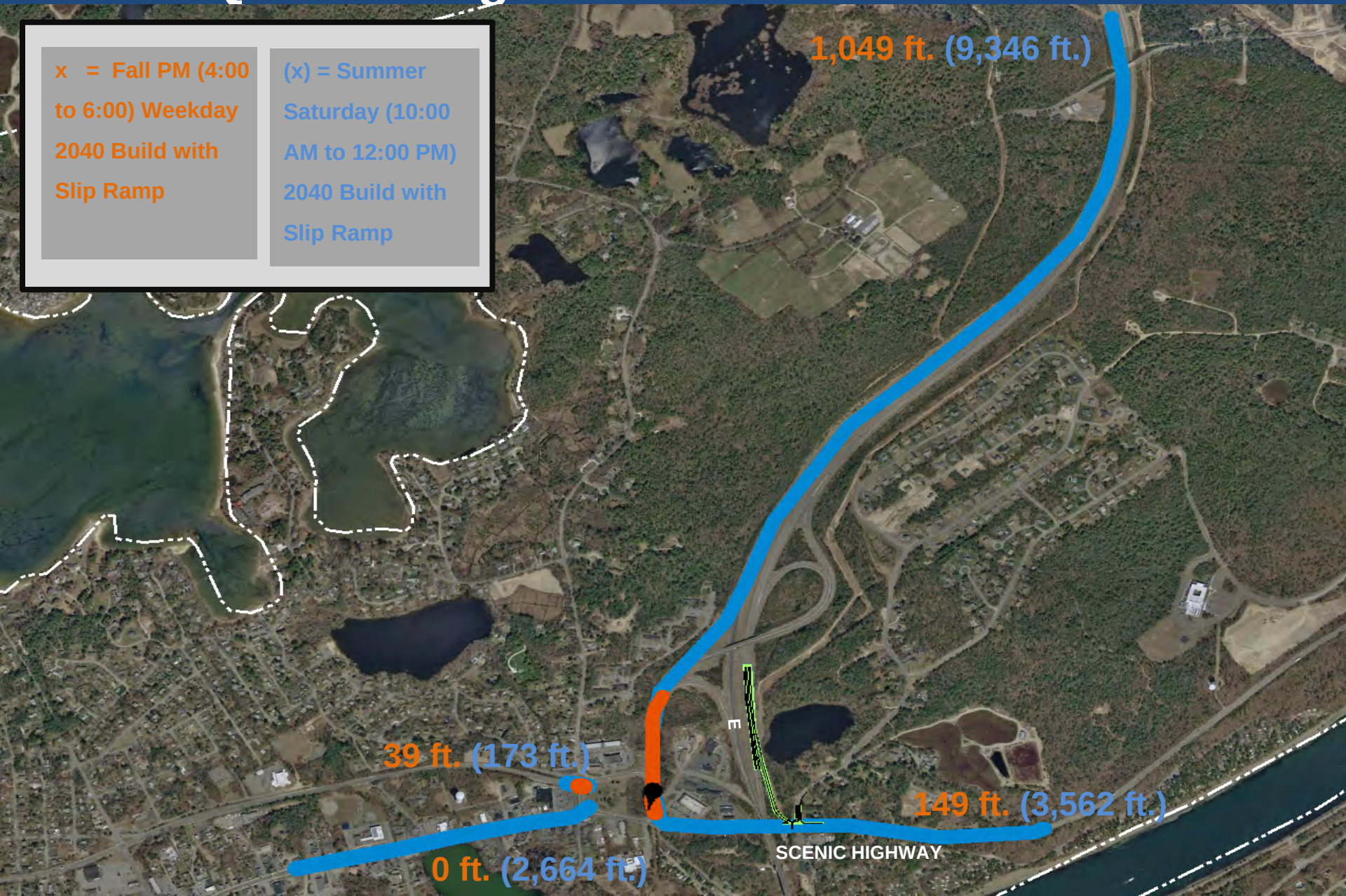
(x) = Summer Saturday (10:00 AM to 12:00 PM) Volumes

LOS

Fall PM (4:00 to 6:00) Weekday 2014 Existing→ 2040 No Build

Summer Saturday (10:00 AM to 12:00 PM) 2014 Existing→ 2040 No Build

Scenic Hwy to Route 25 Westbound Ramp. Queue Lengths at 2040 Peak Periods.



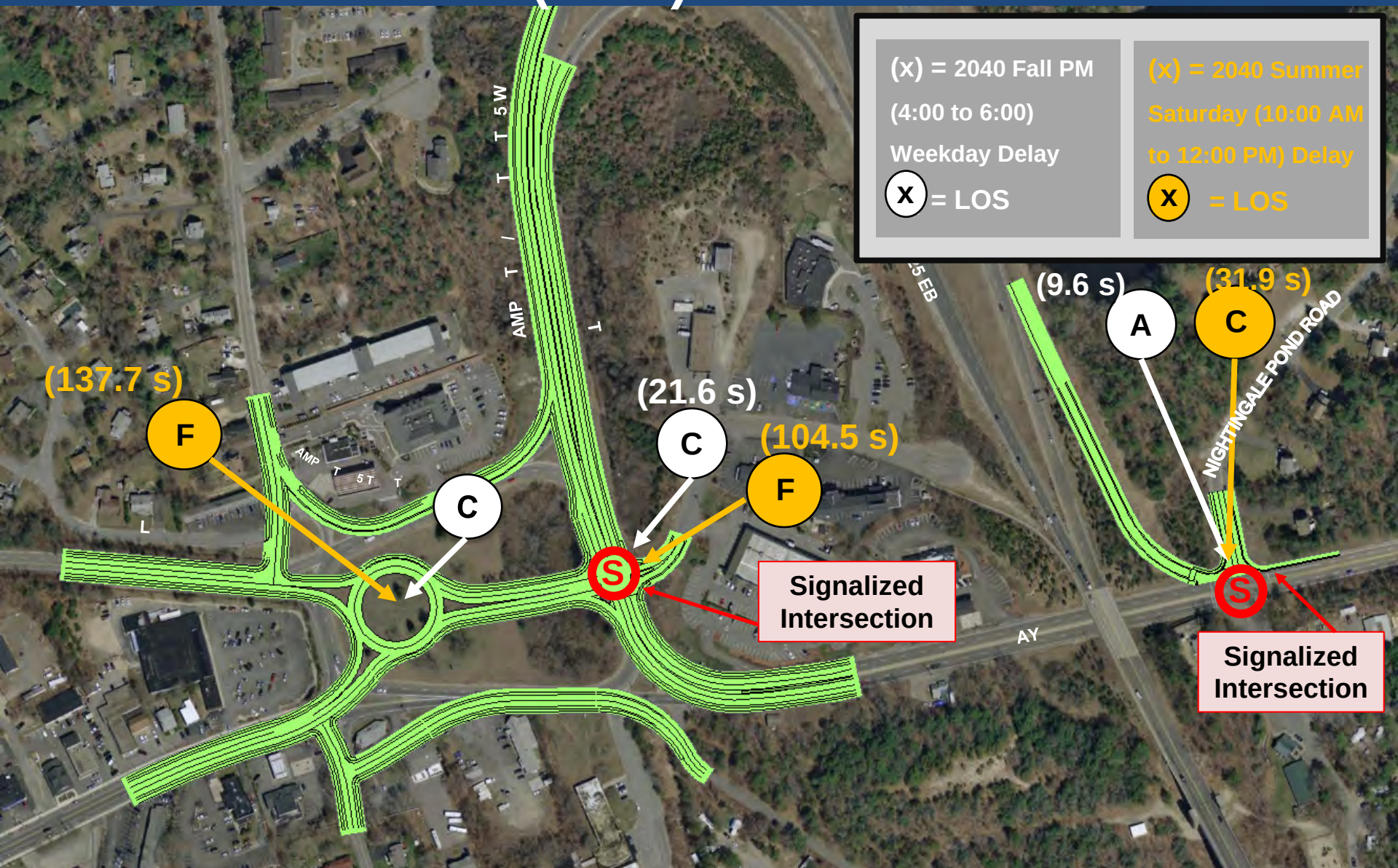
Scenic Hwy to Route 25 Westbound Ramp. Environmental Constraints.



Belmont Circle – Alternative 1
3 Leg Roundabout with Signalized Intersection.

- 3 Leg Roundabout replaces Circle.
- Update Signalized Intersection at Scenic Hwy/Nightingale Pond Road to include Route 25 on ramp.
- Maintains access to all local roadways and properties.
- Includes New Ramp from Scenic Highway to Route 25 Westbound.
- Potentially improves traffic operations and safety in Belmont Circle (high crash loc.).

Belmont Circle – Alternative 1
3 Leg Roundabout with Signalized Intersection.
Future (2040) Fall PM Peak.



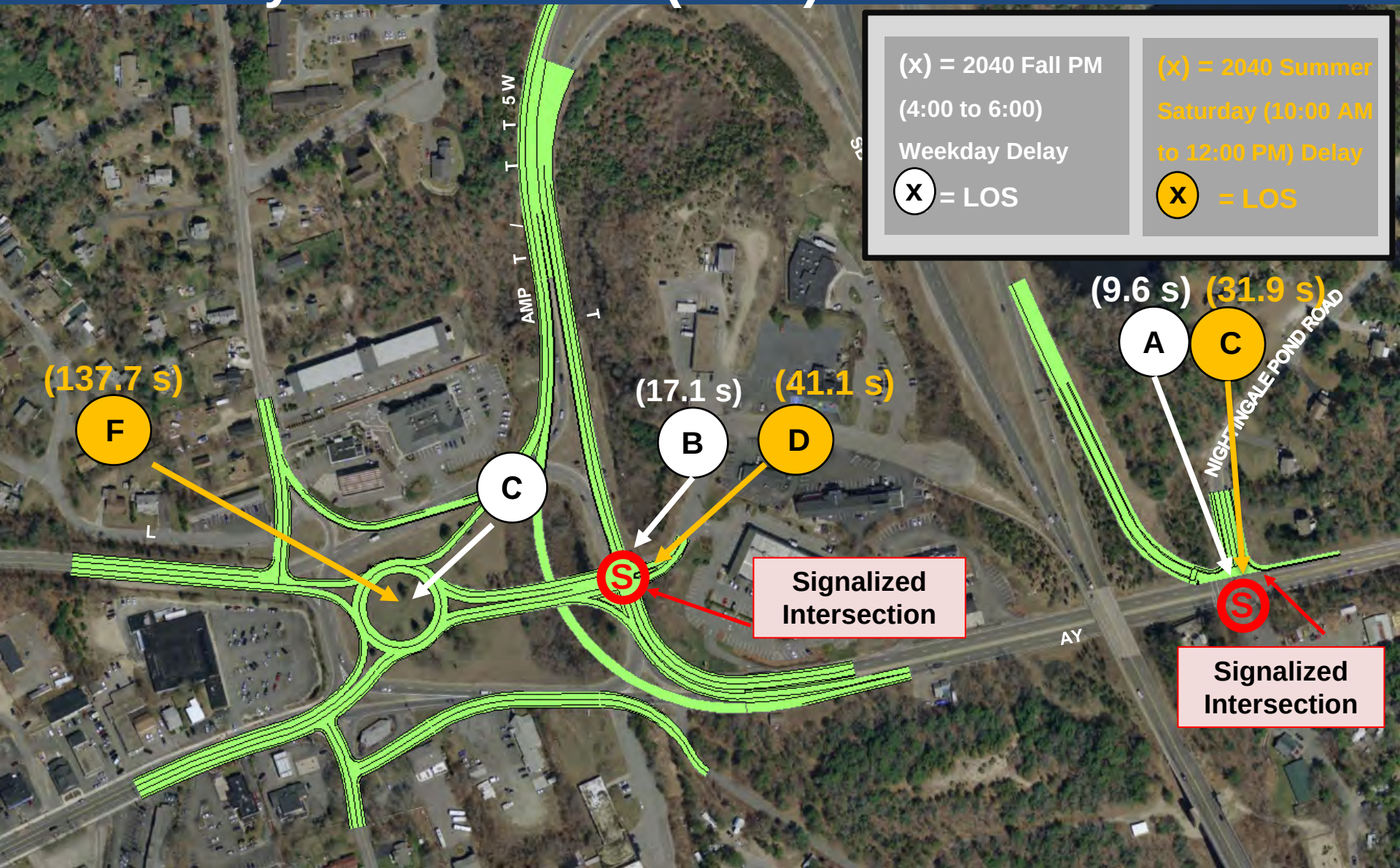
Belmont Circle Alternative 1 Future (2040) Queue Lengths.



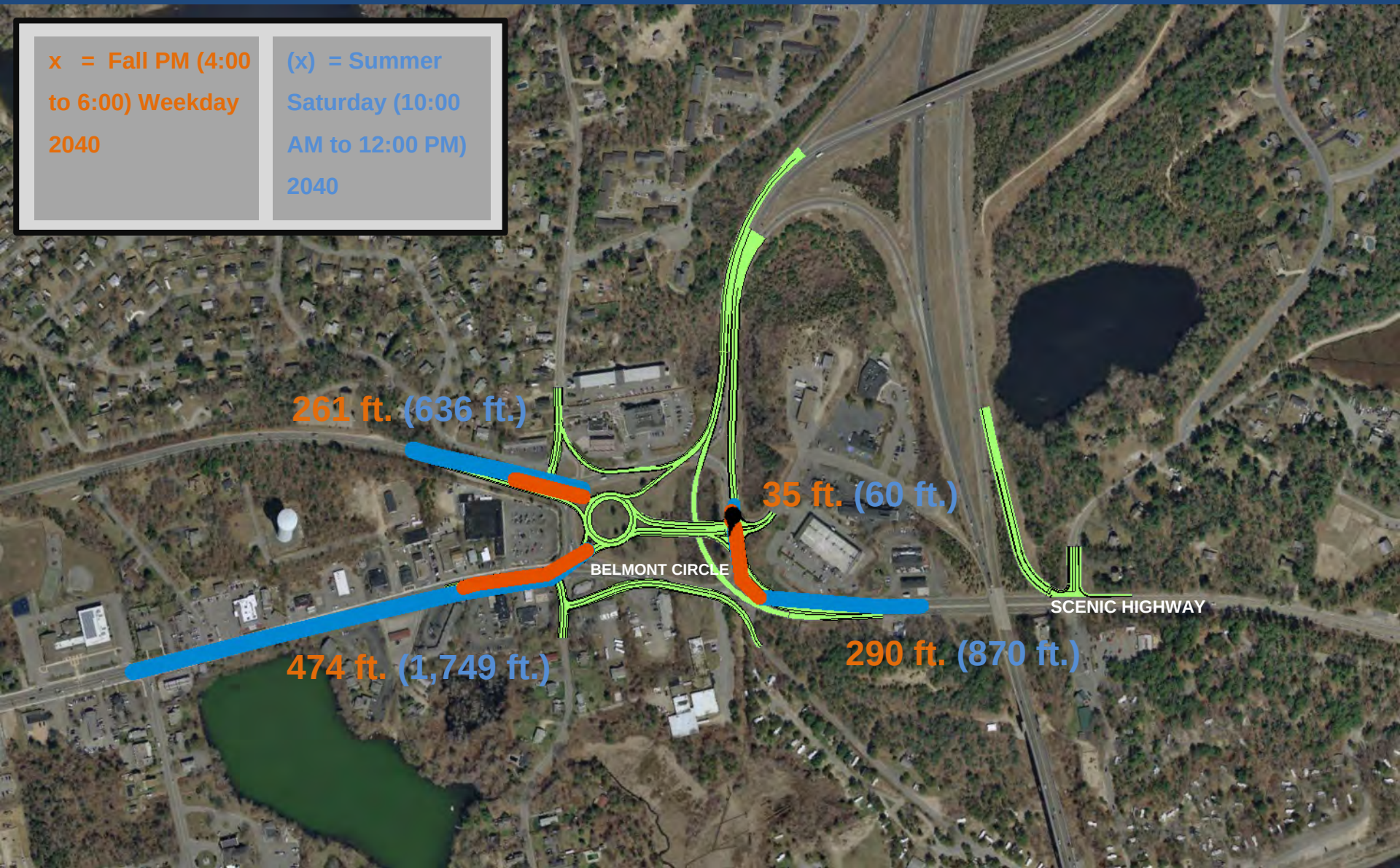
Belmont Circle - Alternative 1A
4 Leg Roundabout with Route 25 Eastbound

- 4 Leg Roundabout replaces Circle.
- Signalized Intersection on Scenic Hwy to Route 25 Ramp.
- Fly-over ramp from Route 25 eastbound to Scenic Hwy.
- Maintains access to all local roadways and properties.
- Includes New Ramp from Scenic Highway to Route 25 Westbound.

Belmont Circle – Alternative 1A
4 Leg Roundabout with Route 25 Eastbound Fly-Over. Future (2040) Fall PM Peak.



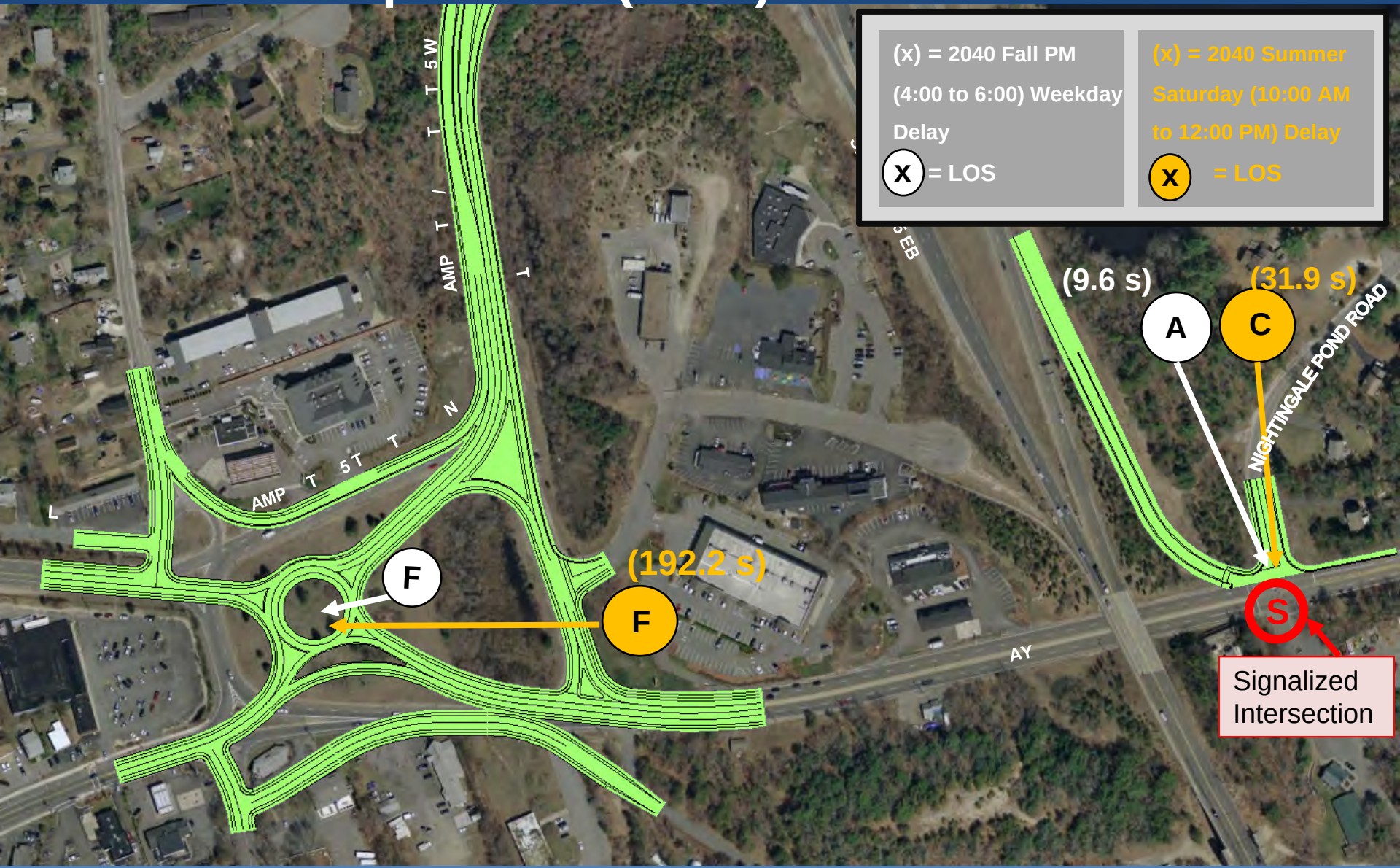
Belmont Circle Alternative 1A Future (2040) Queue Lengths.



Belmont Circle – Alternative 2
4 Leg Roundabout with Main St. to Scenic Hwy

- 4 Leg Roundabout replaces Circle.
- Maintains access to all local roadways and properties.
- Direct Ramp from Main Street to Scenic Hwy.
- Includes New Ramp from Scenic Highway to Route 25 Westbound.
- Potentially improves traffic operations and safety in Belmont Circle (high crash loc.).

Belmont Circle – Alternative 2
4 Leg Roundabout with Main St. to Scenic Hwy Ramp Future (2040) Fall PM Peak.



Belmont Circle Alternative 2 Future (2040) Queue Lengths.



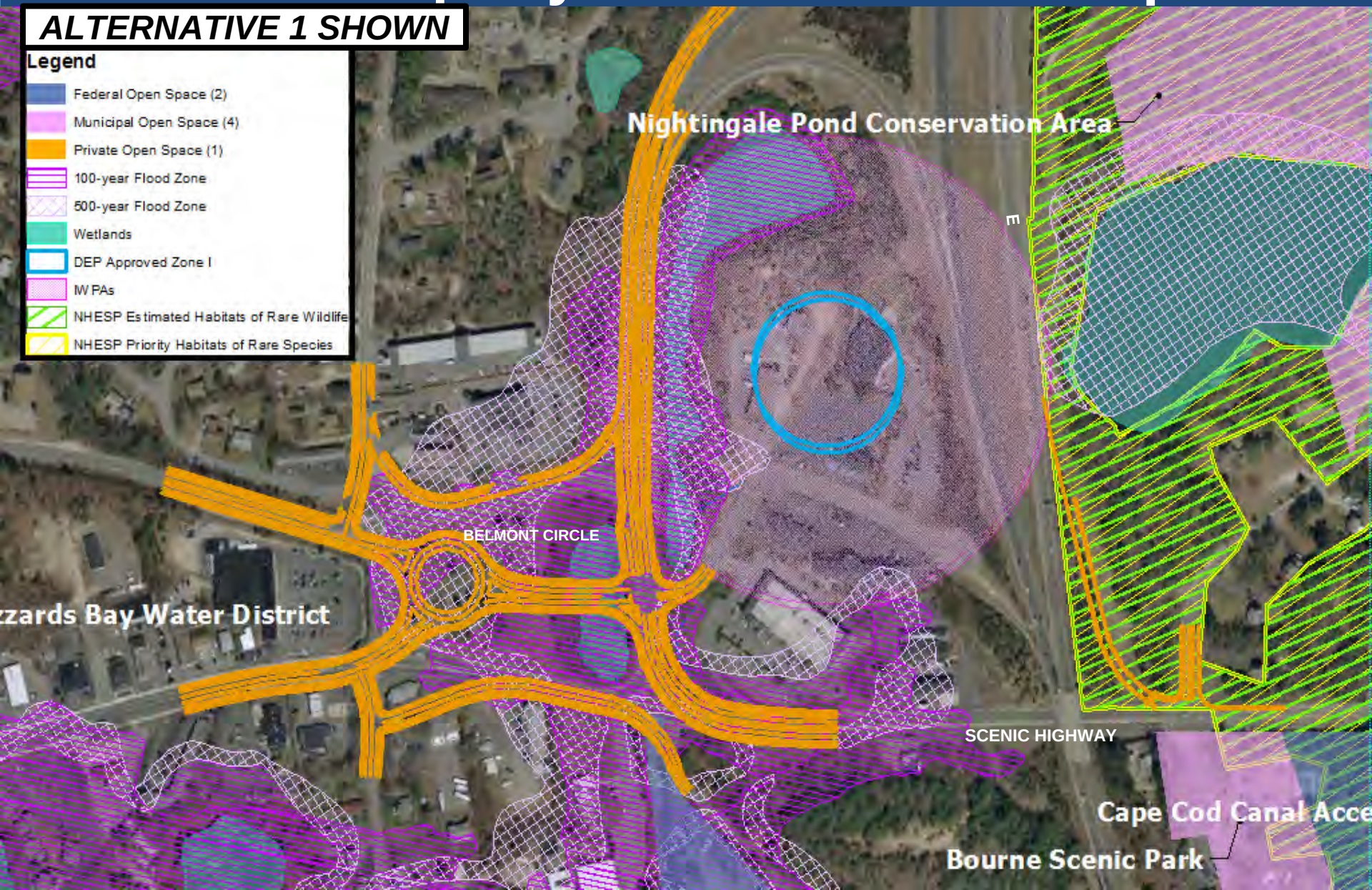
Belmont Circle – Alternatives 1, 1A, 2 Comparison of Fall Weekday PM Queue Lengths.

	2014 Existing		2040 Future No Build		2040 Future Build with Slip Ramp		Alternative 1		Alternative 1A		Alternative 2	
Approaches												
Scenic Hwy East Bound	1,285	Ft	1,820	Ft	149	Ft	290	Ft	290	Ft	30	Ft
Main St East Bound	0	Ft	94	Ft	0	Ft	474	Ft	474	Ft	390	Ft
Route 25 East Bound Exit Ramp	1,009	Ft	1,208	Ft	1,049	Ft	135	Ft	35	Ft	75	Ft
Buzzards Bay Bypass West Bound	75	Ft	67	Ft	39	Ft	261	Ft	261	Ft	225	Ft

Belmont Circle – Alternatives 1, 1A, 2 Comparison of Summer Saturday Queue Lengths.

	2014 Existing		2040 Future No Build		2040 Build with Slip Ramp		Alternative 1		Alternative 1A		Alternative 2	
Approaches												
Scenic Hwy East Bound	10,015	Ft	10,033	Ft	3,562	Ft	870	Ft	870	Ft	255	Ft
Main St East Bound	1,374	Ft	1,670	Ft	2,664	Ft	1,749	Ft	1,749	Ft	675	Ft
Route 25 East Bound Exit Ramp	6,288	Ft	8,931	Ft	9,346	Ft	240	Ft	60	Ft	525	Ft
Buzzards Bay Bypass West Bound	93	Ft	160	Ft	173	Ft	s36	Ft	636	Ft	270	Ft

Belmont Circle
Potential Property / Environmental Impacts.



Belmont Circle
Potential ROW / Environmental Impacts.

	Scenic Hwy to Route 25 WB Ramp		Alternative 1		Alternative 1A		Alternative 2	
Resource Areas:								
Rare Species Habitat	1.1	Acres	0	Acres	0	Acres	0	Acres
Open Space (By Owner)								
Army Corps of Engineering	0	Acres	0.1	Acres	0.1	Acres	0.1	Acres
DEP Wetlands	0	Acres	0.3	Acres	0.5	Acres	0.03	Acres
100-year Floodplain	0	Acres	4.7	Acres	5.4	Acres	4.6	Acres
IWPA (Interim Wellhead Protection Area)	0.2	Acres	0.5	Acres	0.5	Acres	0.4	Acres
Right of Way:								
Residential	0	Acres	0.02	Acres	0.02	Acres	0.02	Acres
Commercial	0	Acres	0.02	Acres	0.02	Acres	0.02	Acres
Utility	0.88	Acres						

Belmont Circle
Study Team Suggestion.

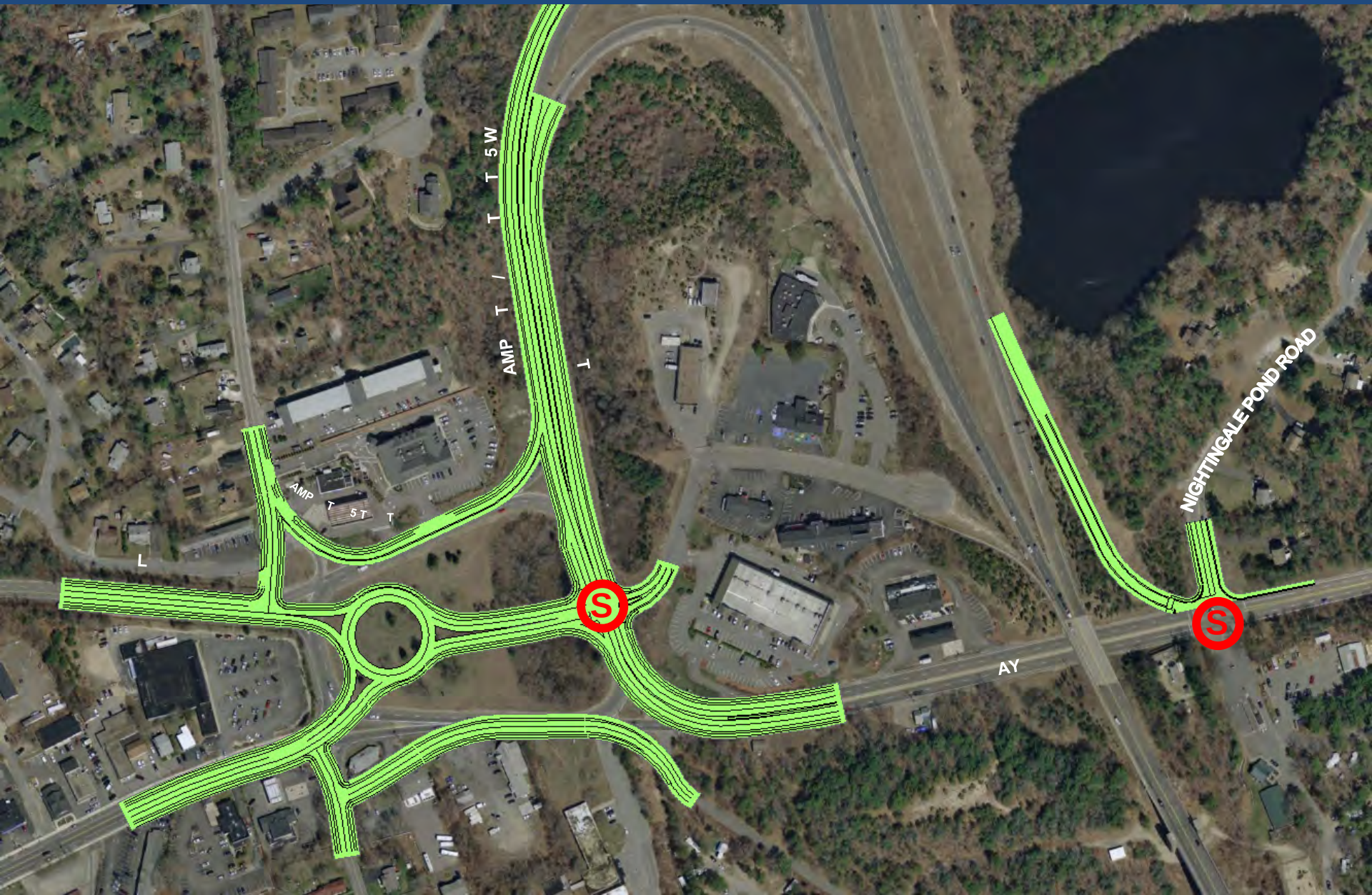
- The Study Team suggests advancing

 ALTERNATIVE 1 – 3 LEG ROUNDABOUT WITH SIGNALIZED INTERSECTION

 for Travel Demand Model analysis.

- Reason: Improved traffic operations with simpler, less costly design. Less environmental or property impact.

Belmont Circle – Alternative 1
3 Leg Roundabout with Signalized Intersection.



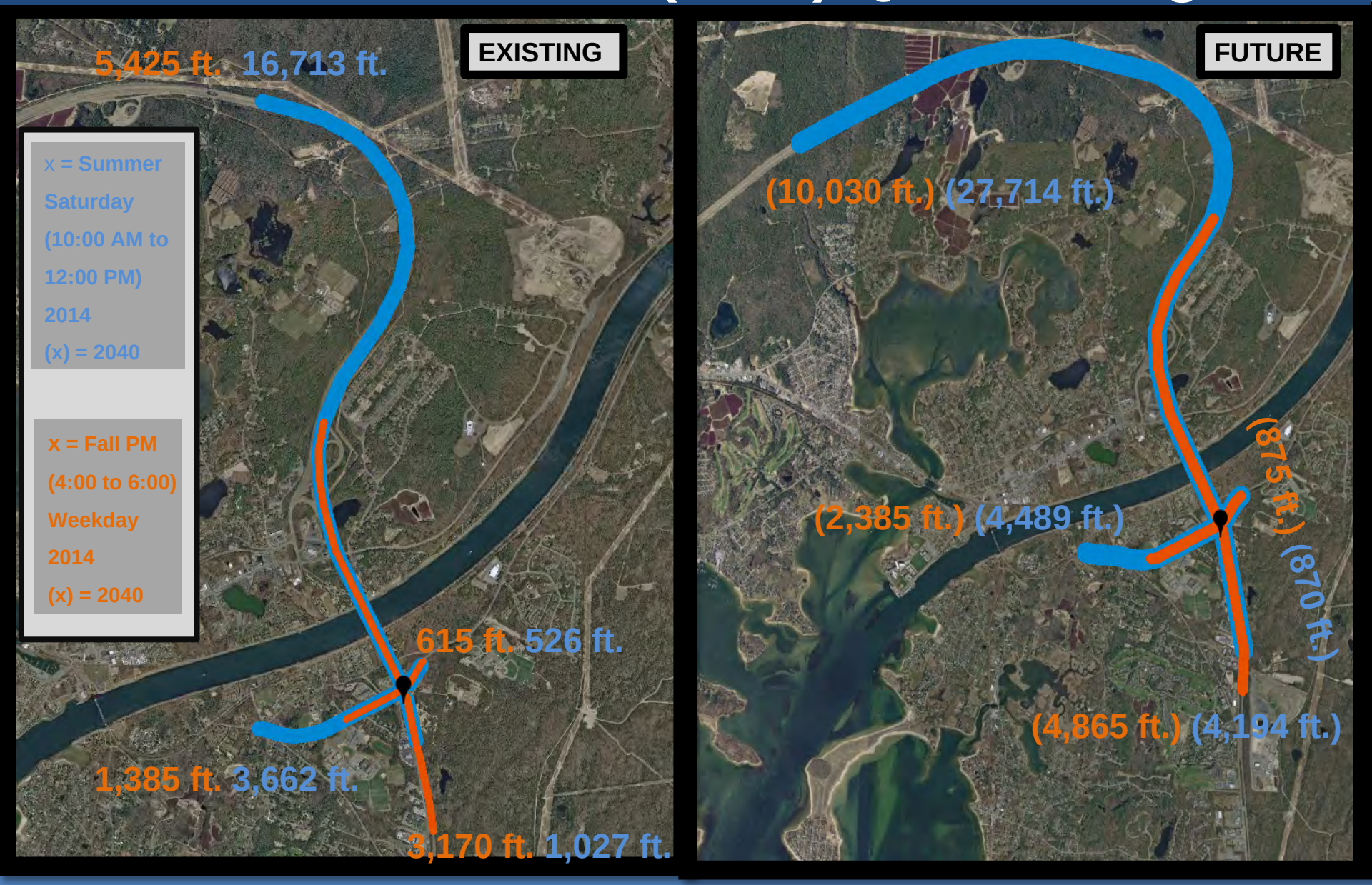
Bourne Rotary.



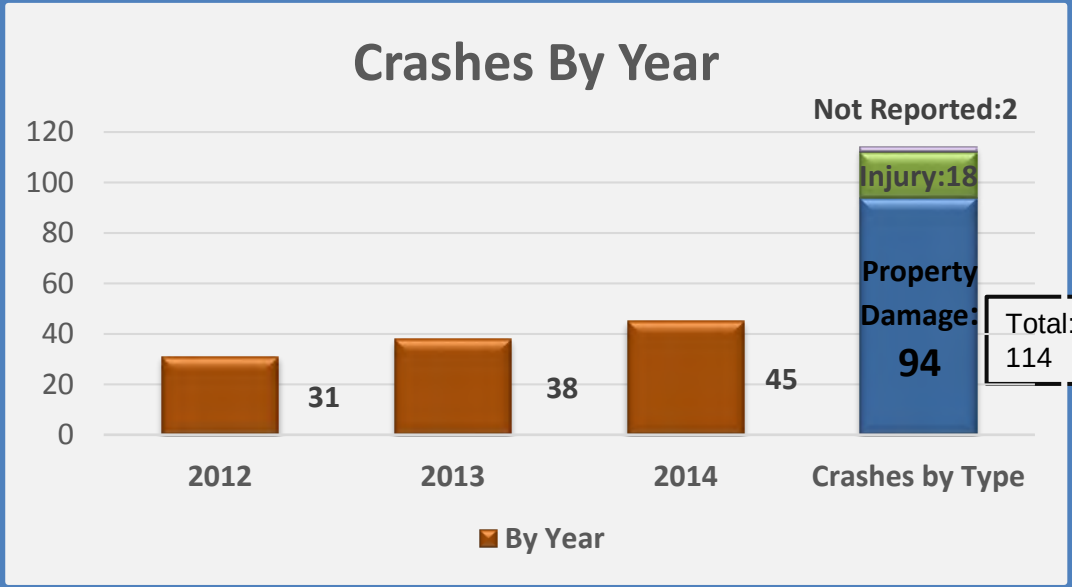
Bourne Rotary.

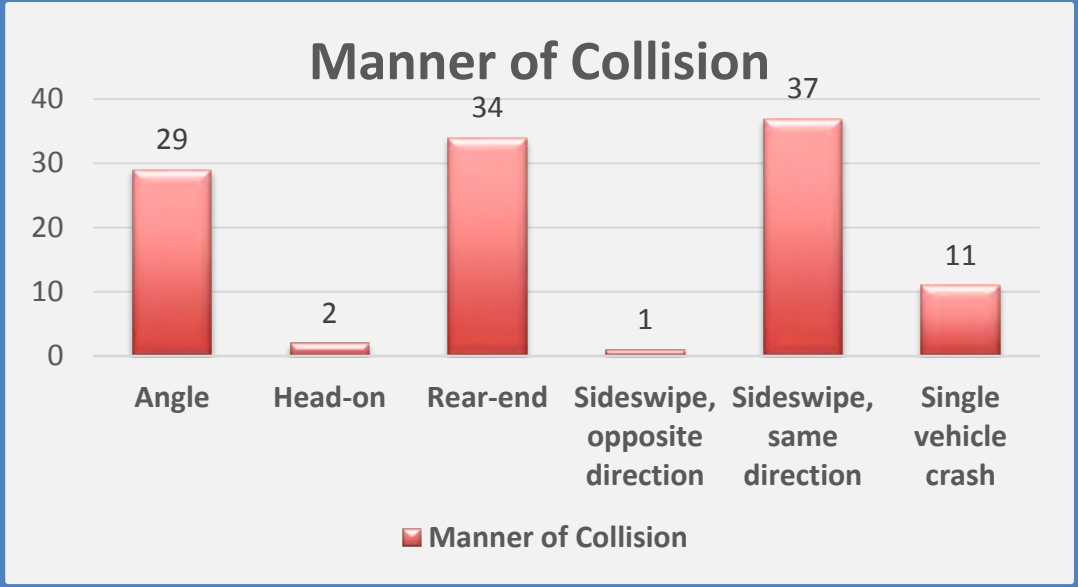


Bourne Rotary Fall PM Peak Existing (2014) and Future No Build (2040) Queue Lengths.



Bourne Rotary Crash History





How proposed improvements may reduce crash rates

- Conflicts reduced because traffic redirected to ramps outside of rotary.
- Signalized intersections reduce conflicts.

Bourne Rotary – Transportation Improvement Alternatives.

- Alternatives 1, 1A, and 2 conceived to be compatible with existing Bourne Bridge.
- May be compatible with future Bourne Bridge with consideration of:
 - Proximity of bridge to rotary
 - Horizontal and vertical alignment of new bridge.
- Alternative 3 and 3A conceived to be compatible with new bridge (with alignment inside of existing bridge).

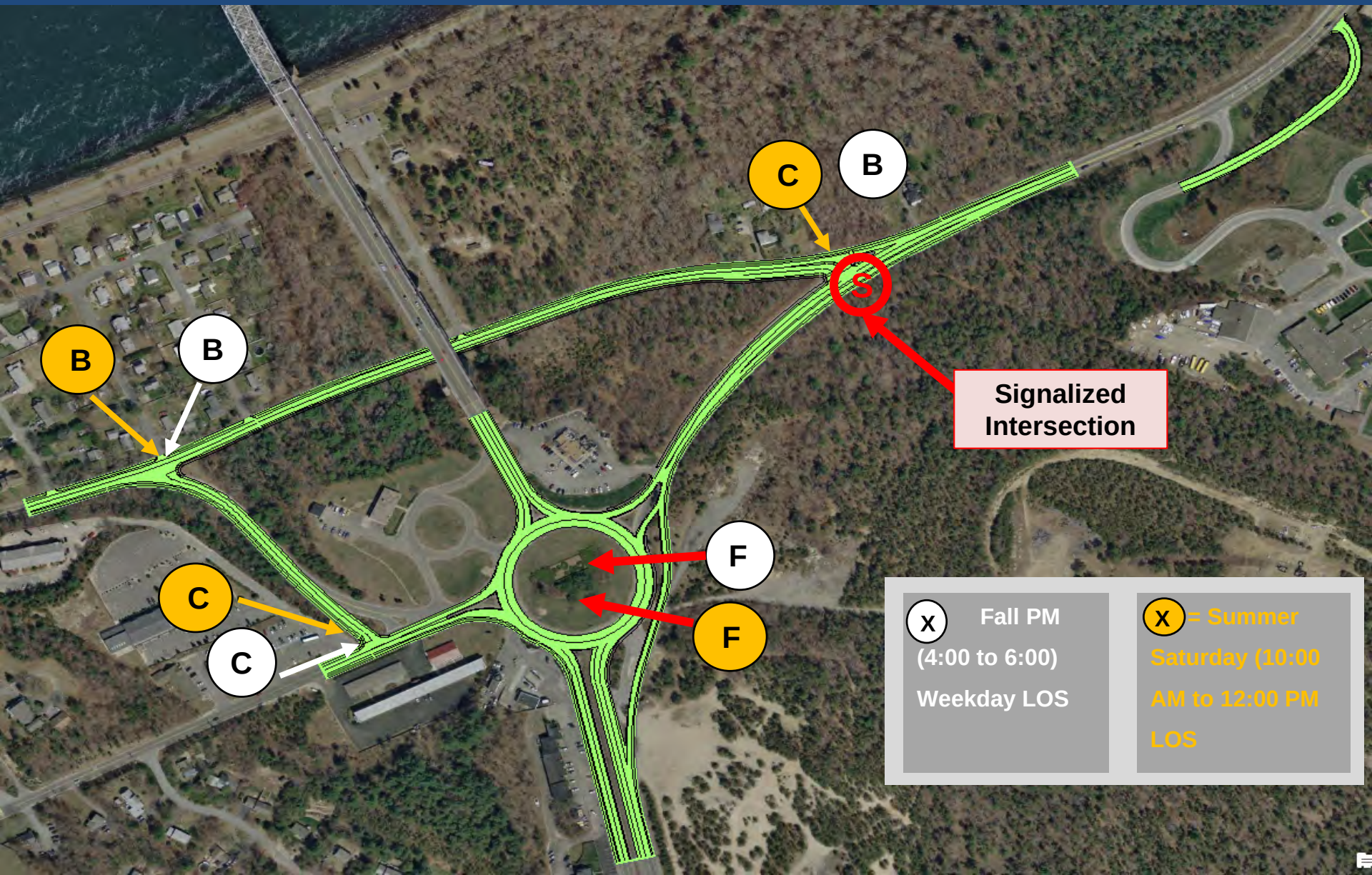
Bourne Rotary Alternative 1.

- Direct ramp from Route 28 northbound to Bourne Rotary Connector.
- Signalized intersection at Old Sandwich Road at Sandwich Road/Bourne Rotary Connector.
- Direct access ramp from Bourne Rotary Connector to Sandwich Road (‘Florida T’).
- Relocation of High School driveway entrance (350 feet east).

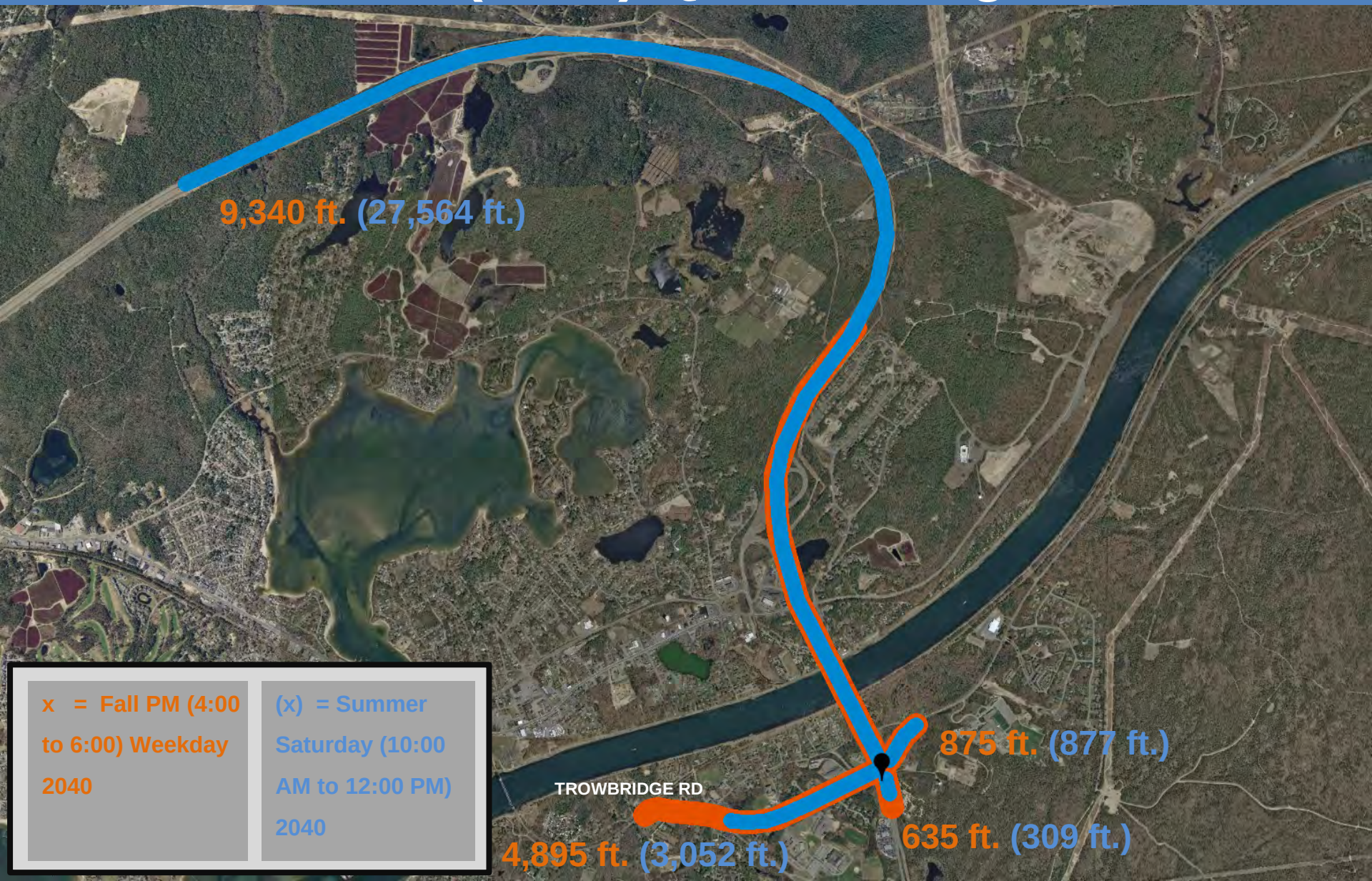
Bourne Rotary Alternative 1 – Route 28 Northbound Ramp.



Bourne Rotary Alternative 1
Future (2040) LOS.



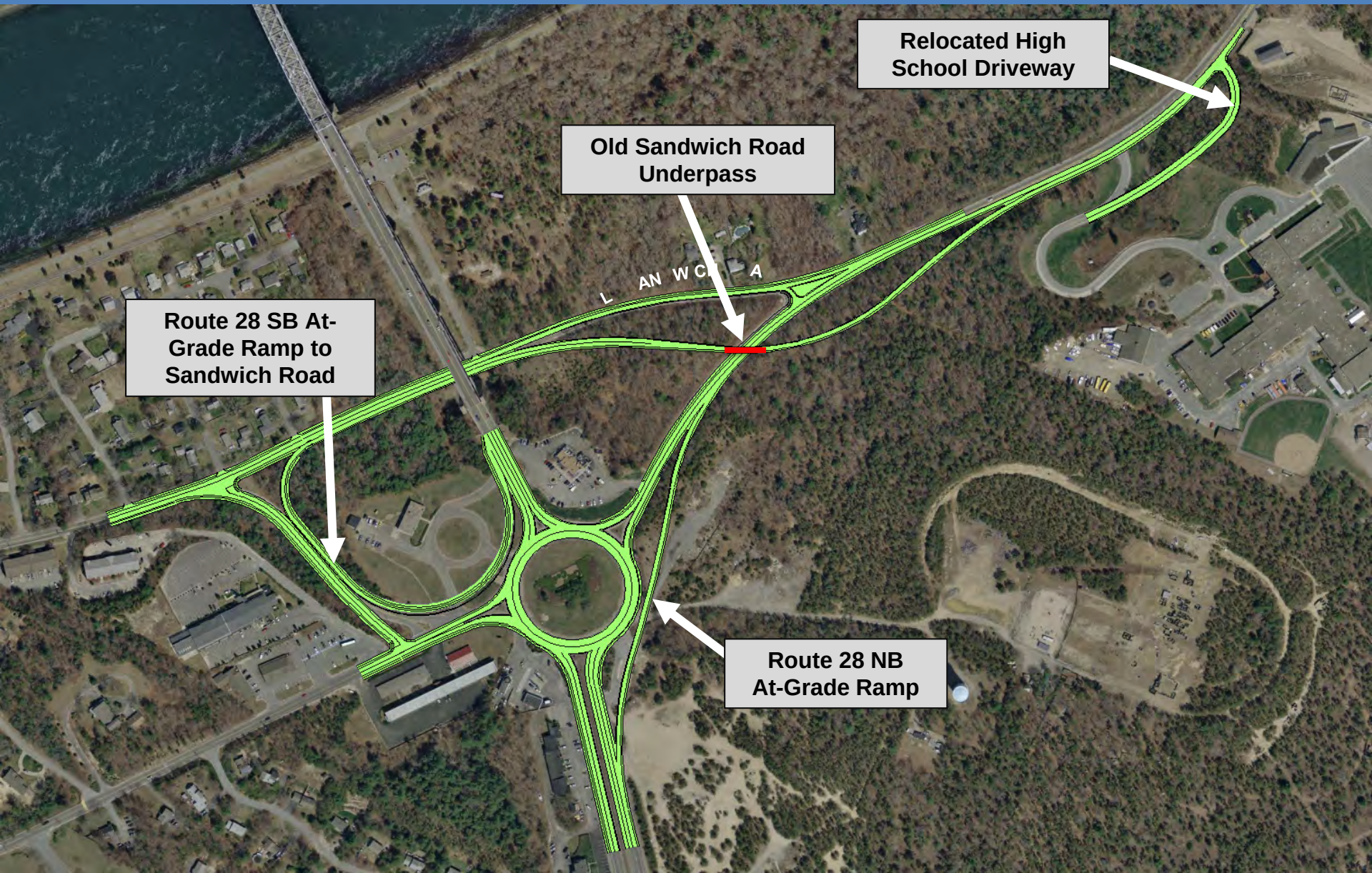
Bourne Rotary Alternative 1 – Future (2040) Queue Lengths.



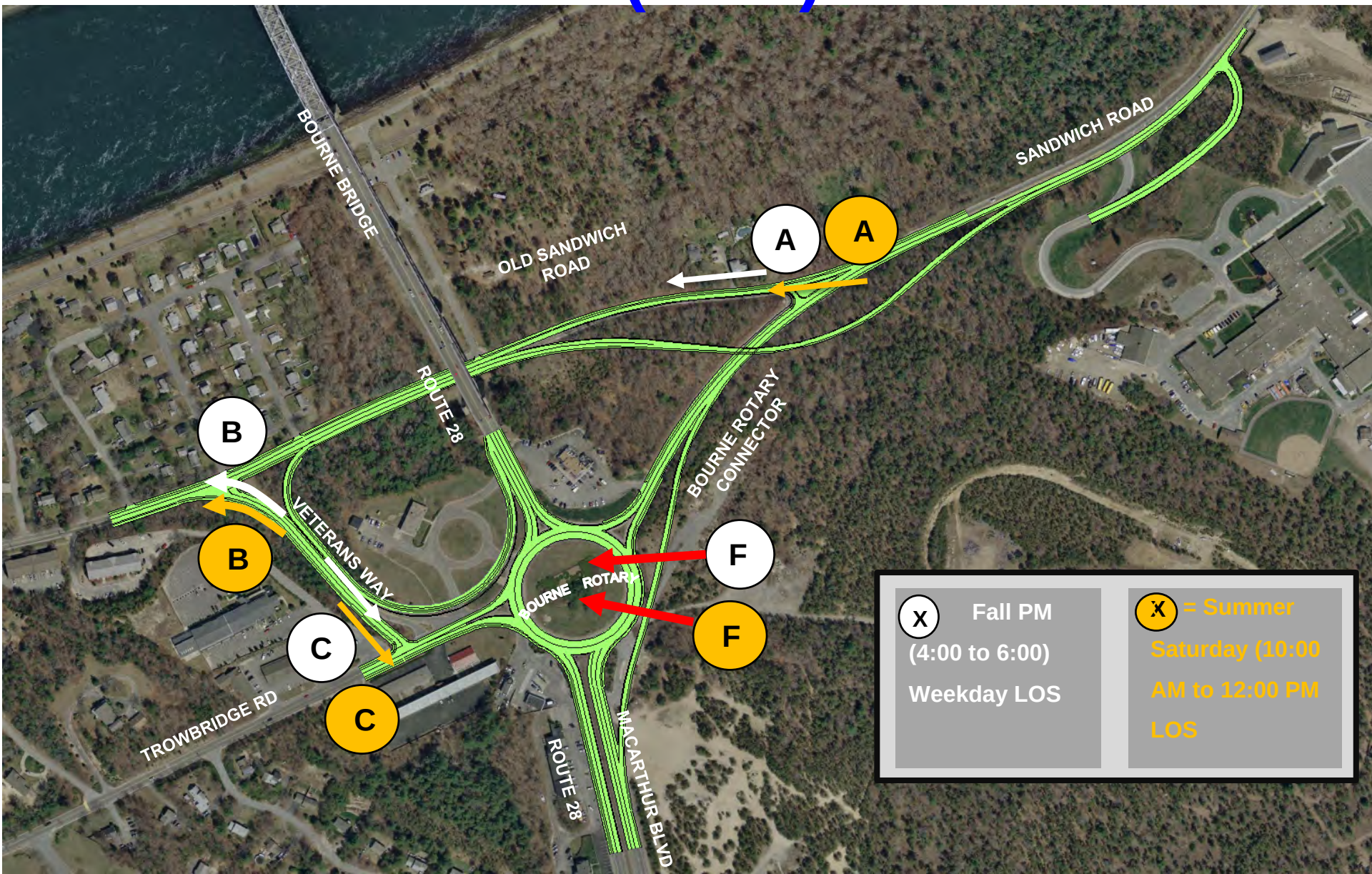
Bourne Rotary – Alternative 1A

- Direct Ramp from Route 28 southbound to Old Sandwich Road (via Veteran's Way).
- Old Sandwich Road over/underpass to Sandwich Road.
- Direct ramp from Route 28 northbound to Bourne Rotary Connector.
- Potentially improves traffic operations and safety in Bourne Rotary (high crash location).

Bourne Rotary Alternative 1A – Route 28 North and Southbound Ramps.



Bourne Rotary Alternative 1A Future (2040) LOS.



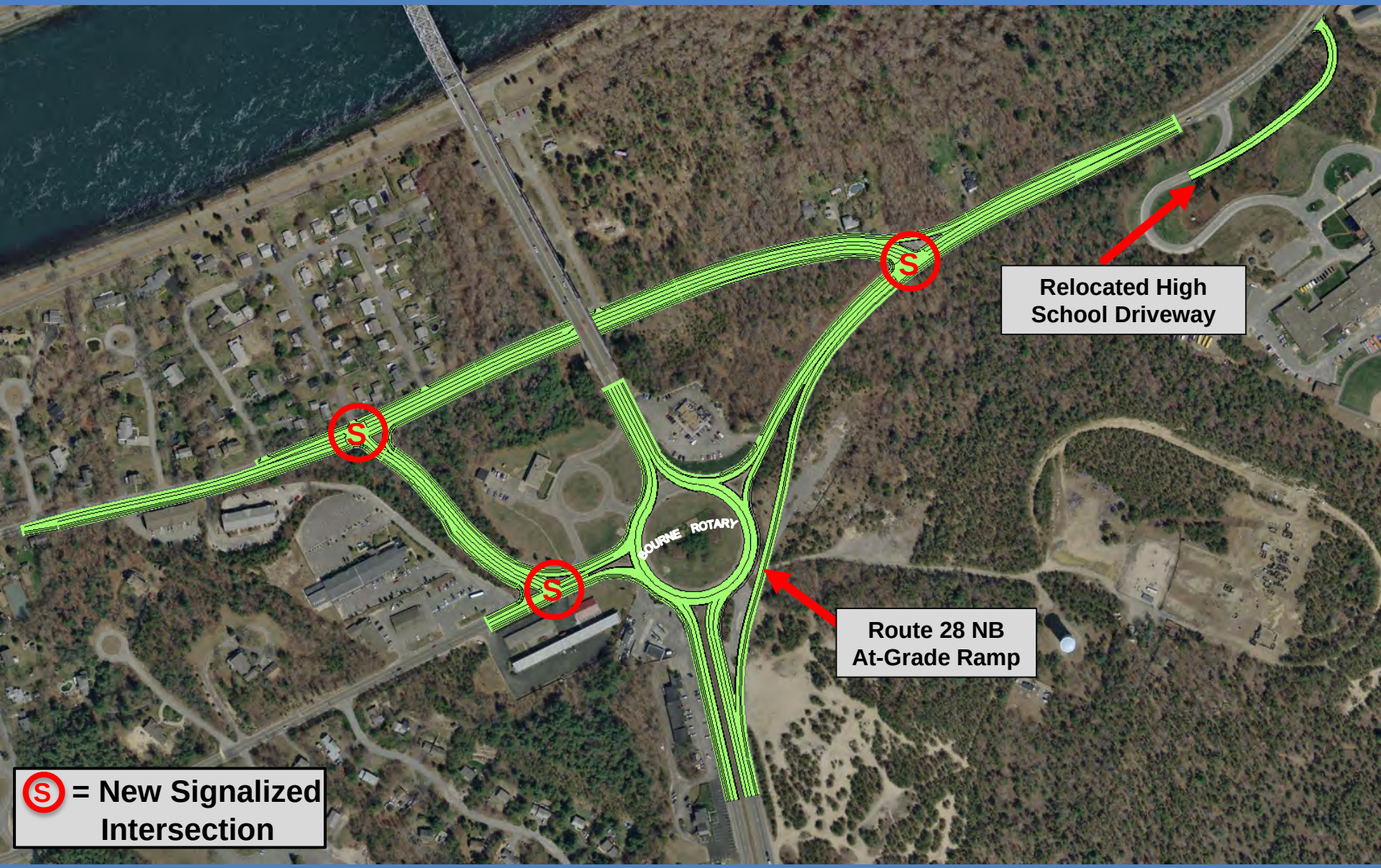
Bourne Rotary – Alternative 1A
Future (2040) Queue Lengths.



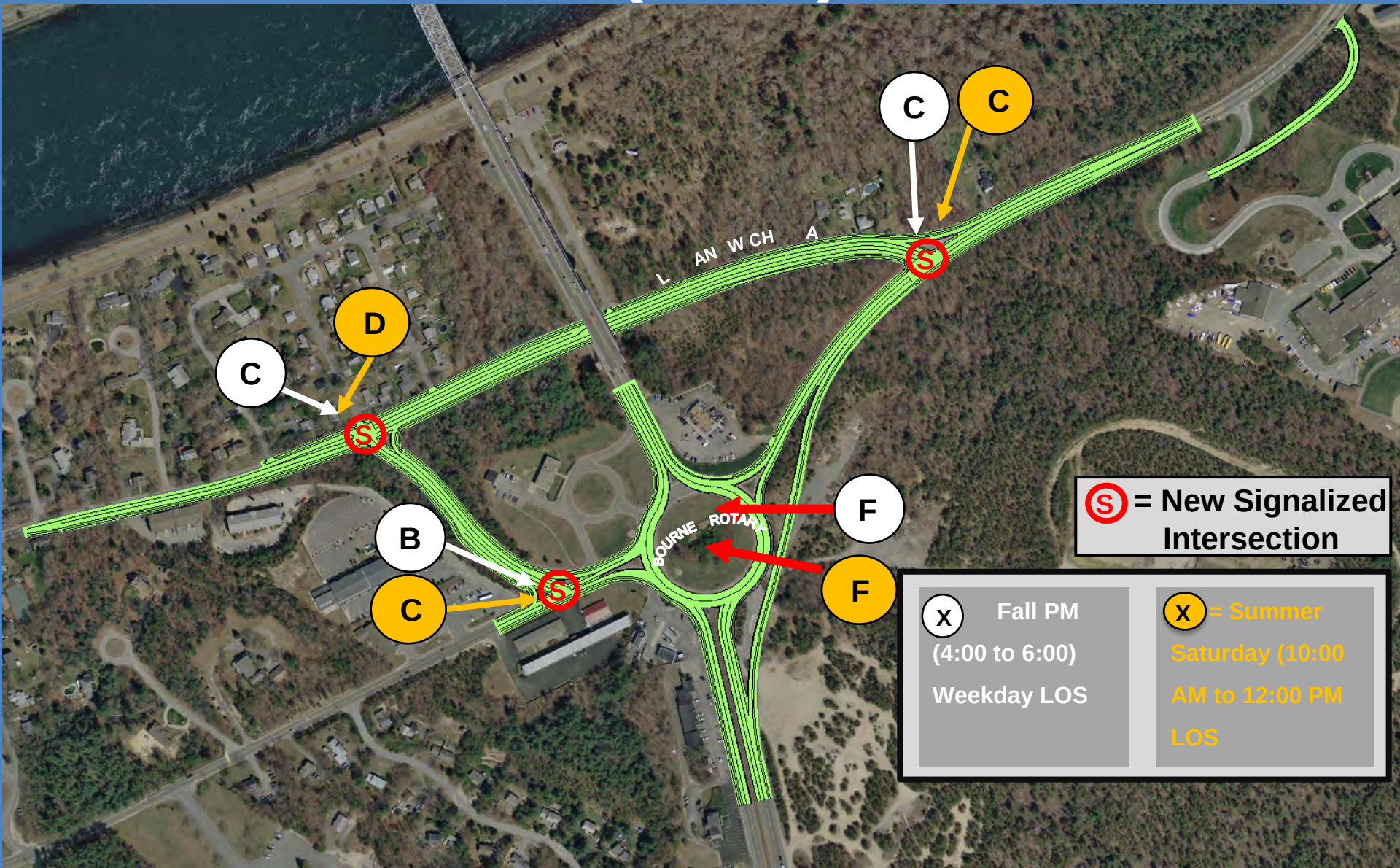
Bourne Rotary – Alternative 2.

- Direct ramp from Route 28 northbound to Bourne Rotary Connector.
- 3 new Signalized Intersections.
 - Veteran’s Way at Trowbridge Road.
 - Veteran’s Way at Old Sandwich Road.
 - Old Sandwich Road at Sandwich Road.
- No access around ‘top’ of Rotary

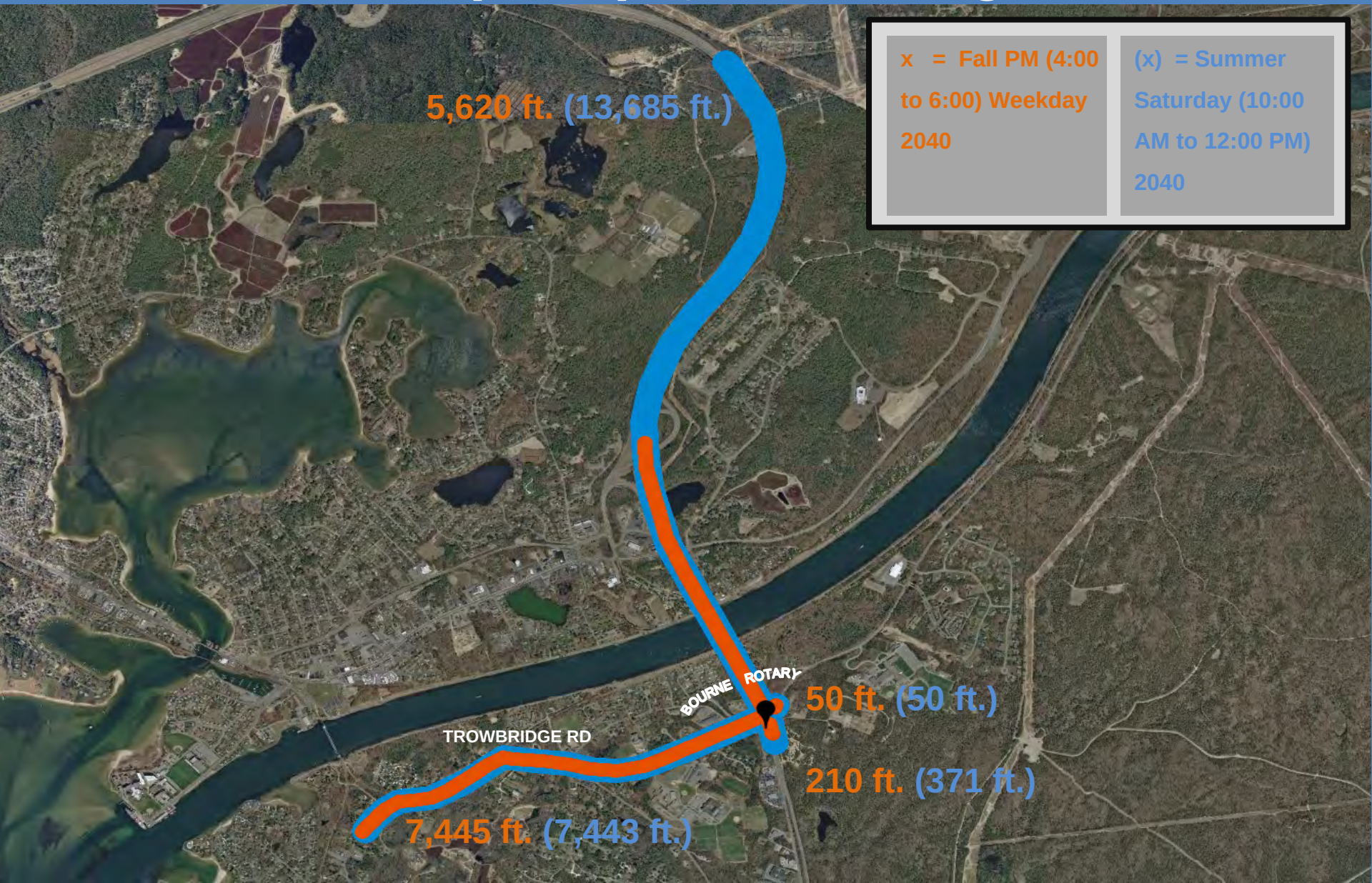
Bourne Rotary Alternative 2
3 Signalized Intersections



Bourne Rotary Alternative 2 Future (2040) LOS.



Bourne Rotary – Alternative 2
Future (2040) Queue Lengths.



Bourne Rotary – Alternatives 1, 1A, 2 Comparison of Fall Weekday PM Queue Lengths.

	2014 Existing		2040 Future No Build		2040 Alternative 1		2040 Alternative 1A		2040 Alternative 2	
Approaches										
Route 28 North Bound	3,170	Feet	4,865	Feet	635	Feet	175	Feet	210	Feet
Route 28 South Bound	5,425	Feet	10,030	Feet	9,340	Feet	2,955	Feet	5,620	Feet
Bourne Rotary Connector	615	Feet	875	Feet	875	Feet	875	Feet	50	Feet
Trowbridge Road	1,385	Feet	2,385	Feet	4,895	Feet	1,760	Feet	7,445	Feet

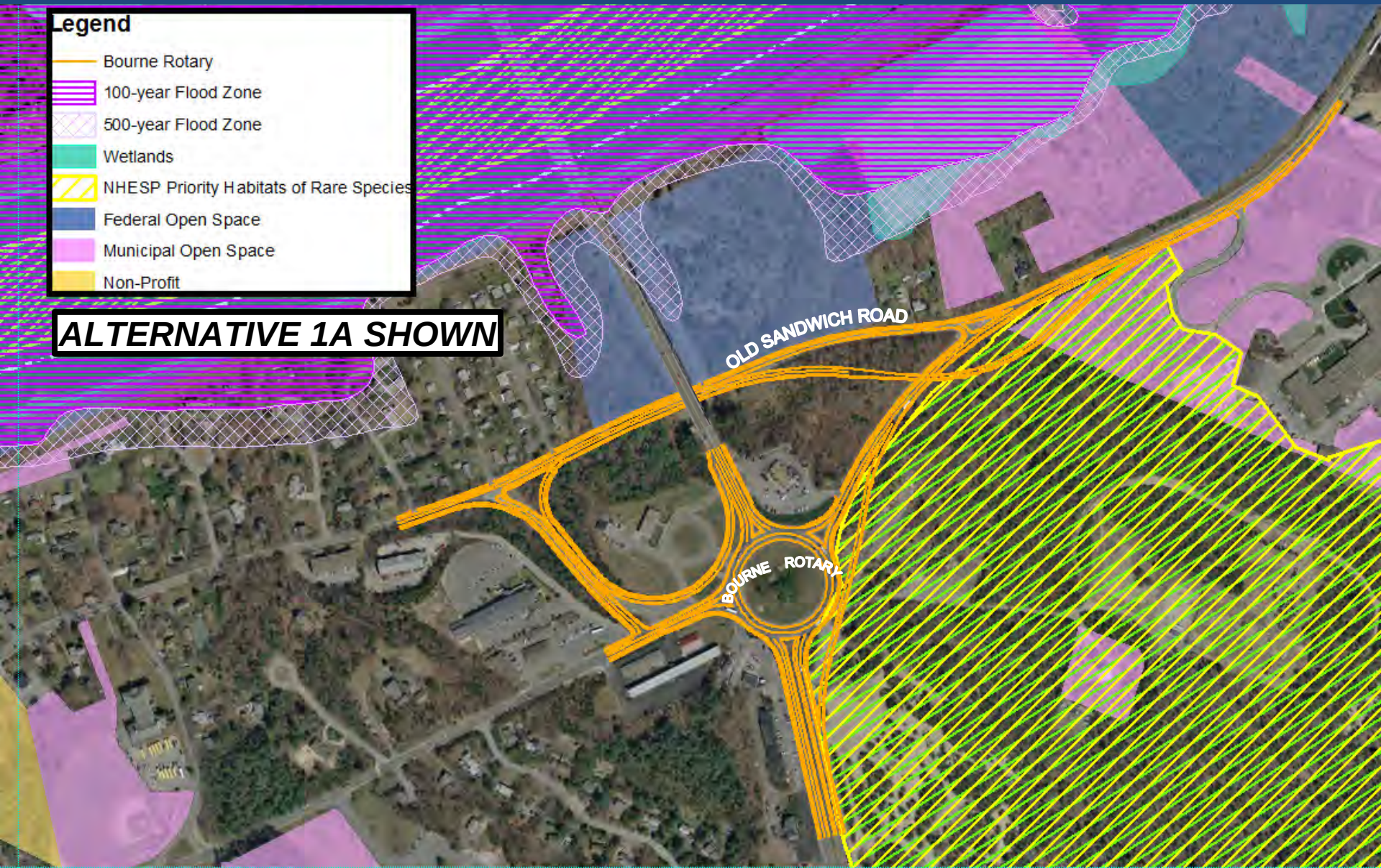
NOTE: FALL PM WEEKDAY QUEUE LENGTHS SHOWN

Bourne Rotary – Alternatives 1, 1A, 2 Comparison of Summer Saturday Queue Lengths.

	2014 Existing		2040 Future No Build		2040 Alternative 1		2040 Alternative 1A		2040 Alternative 2	
Approaches										
Route 28 North Bound	1,027	Feet	4,194	Feet	309	Feet	214	Feet	371	Feet
Route 28 South Bound	16,713	Feet	27,714	Feet	27,564	Feet	17,029	Feet	13,685	Feet
Bourne Rotary Connector	525	Feet	870	Feet	877	Feet	874	Feet	50	Feet
Trowbridge Road	3,662	Feet	4,489	Feet	3,052	Feet	1,684	Feet	7,443	Feet

NOTE: SUMMER SATURDAY QUEUE LENGTHS SHOWN

Bourne Rotary
Potential ROW / Environmental Impacts.



Bourne Rotary
Potential ROW / Environmental Impacts.

	Alternative 1		Alternative 1A		Alternative 2	
Resource Areas:						
Rare Species Habitat	1.3	AC	3.3	AC	2.0	AC
Army Corps of Engineering	0.1	AC	0.2	AC	0.4	AC
Town of Bourne	0.0	AC	1.0	AC	0.0	AC
Right of Way:						
Residential	0.02	AC	0.02	AC	0.31	AC
State Police Barracks	0	AC	0.17	AC	0.14	AC

Bourne Rotary
Study Team Suggestion.

The Study Team suggests advancing

ALTERNATIVE 2 – 3 SIGNALIZED INTERSECTIONS

for Travel Demand Model analysis.

Reason: Improved traffic operations. Potentially more compatible with new Bourne Bridge. Less impact to State Police barracks

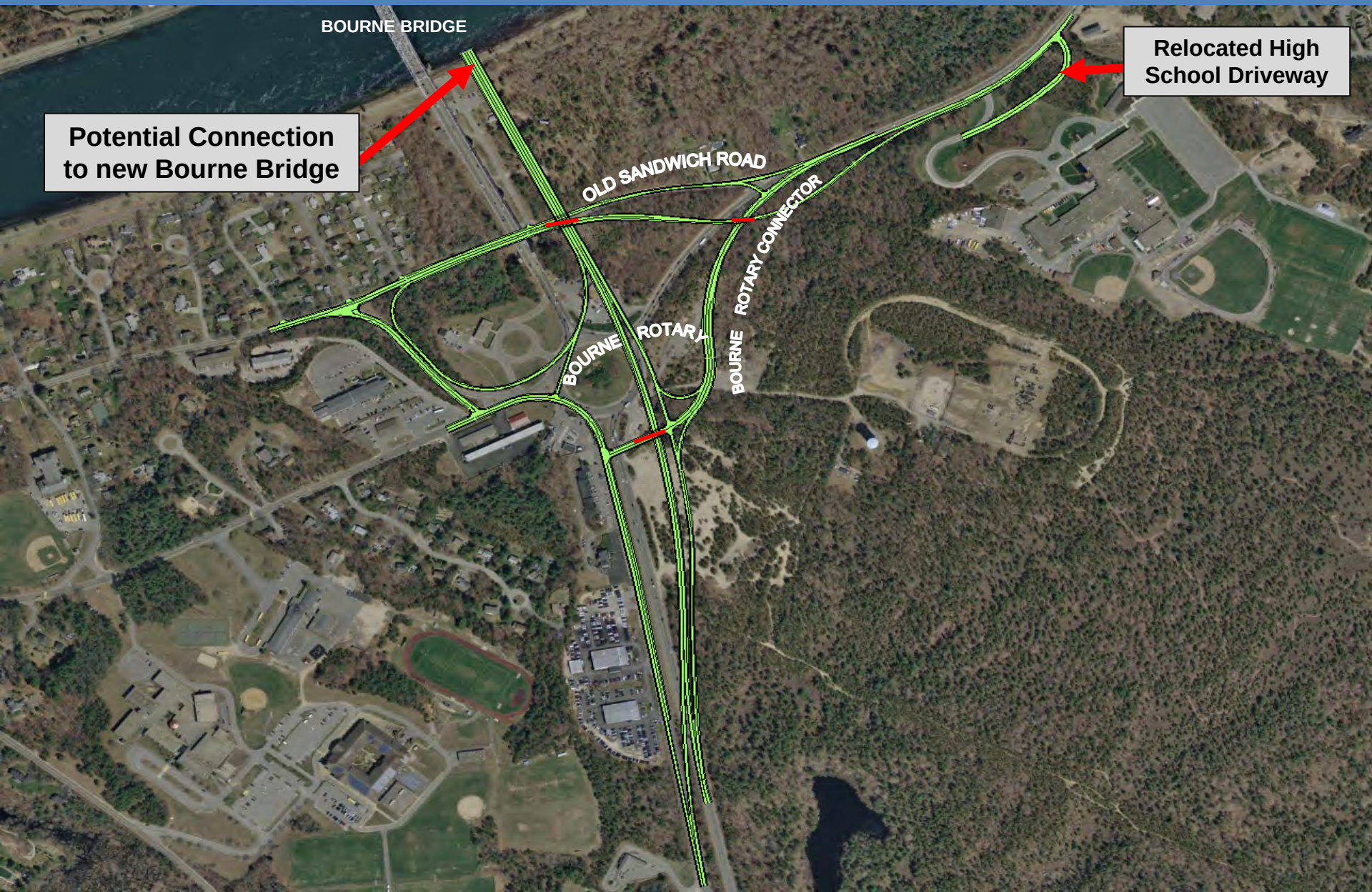
Bourne Rotary Alternative 2.



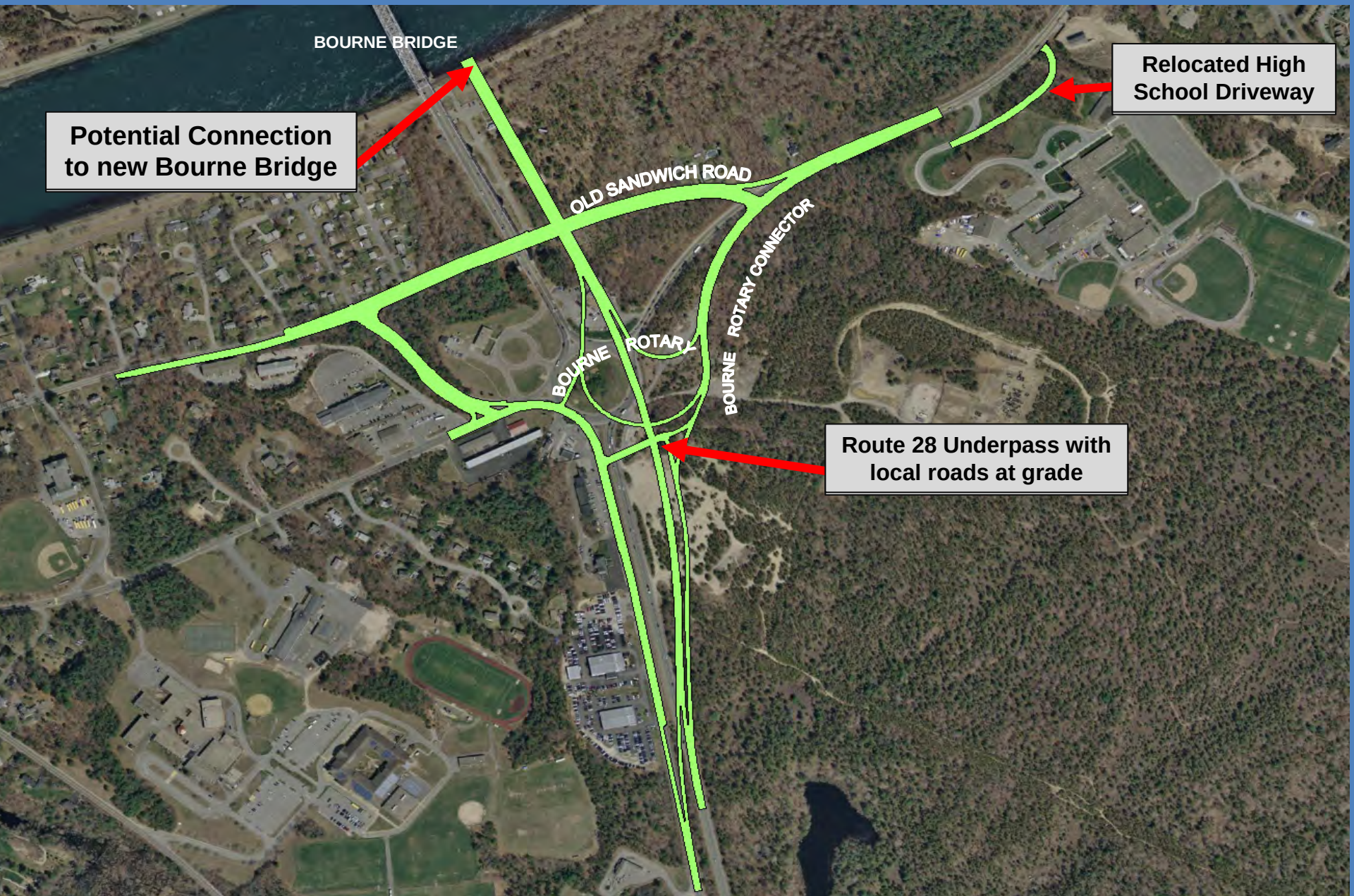
Bourne Rotary – Alternative 3 and 3A
Long-Term Interchange Alternative

- Potential Alternative built concurrently with new bridge.
- Replacement of rotary with highway interchange.
- Grade-separated through traffic on Route 28
- Maintains all local access.
- Relocated high school driveway.
- Compatible with new, relocated Bourne Bridge.

Bourne Rotary - Alternative 3.



Bourne Rotary - Alternative 3A.



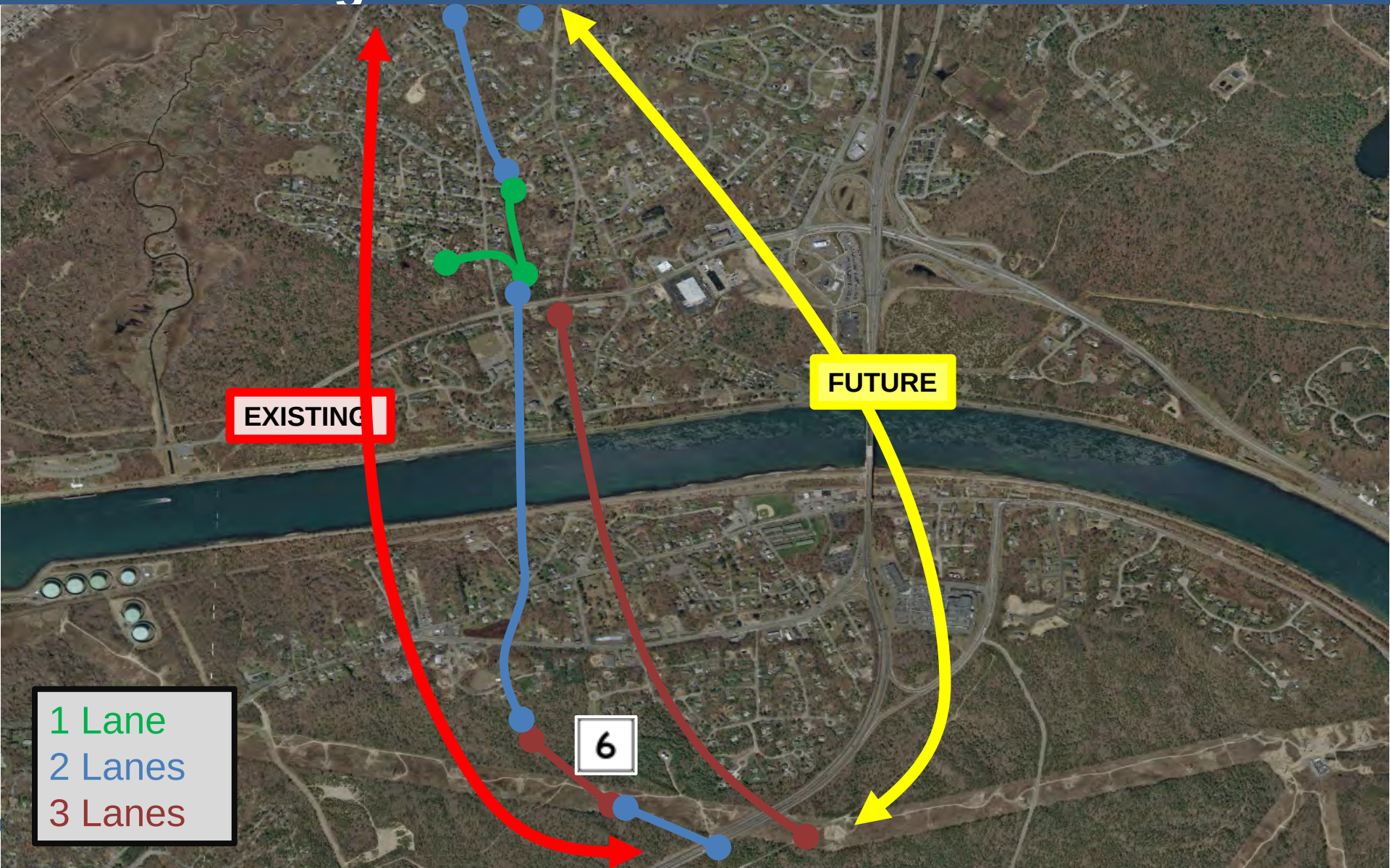
Route 6 Eastbound Additional Travel Lane.

- Eastbound lane from Mid-Cape Connector to Exit 2 (Route130).
- Long Term Project - Potential component of Sagamore Bridge Replacement.
- Potentially reduces congestion and improves safety on Route 6 by allowing smoother merging of traffic entering or exiting Mid Cape Connector.
- Limited environmental impact.

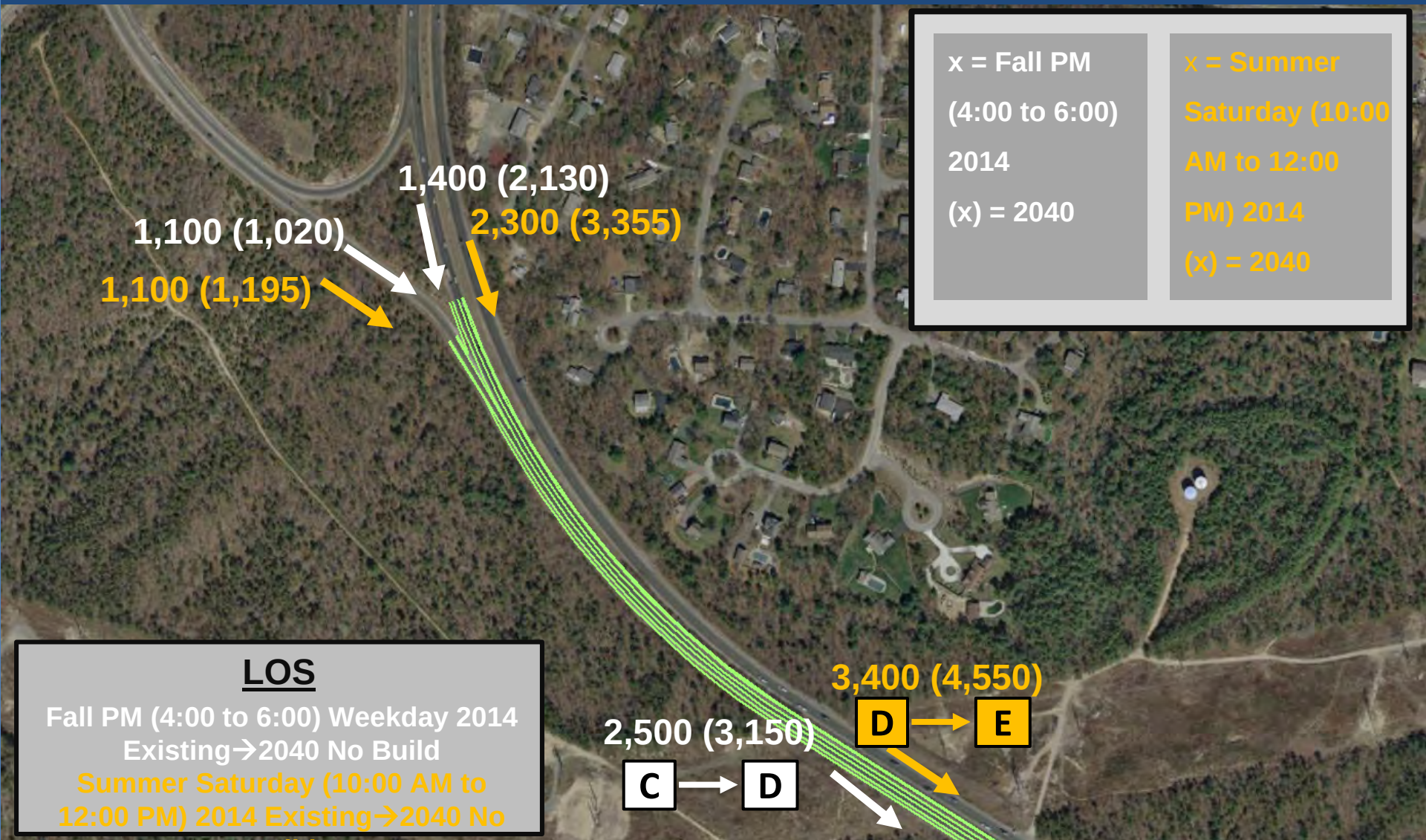
Route 6 Eastbound Additional Travel Lane.



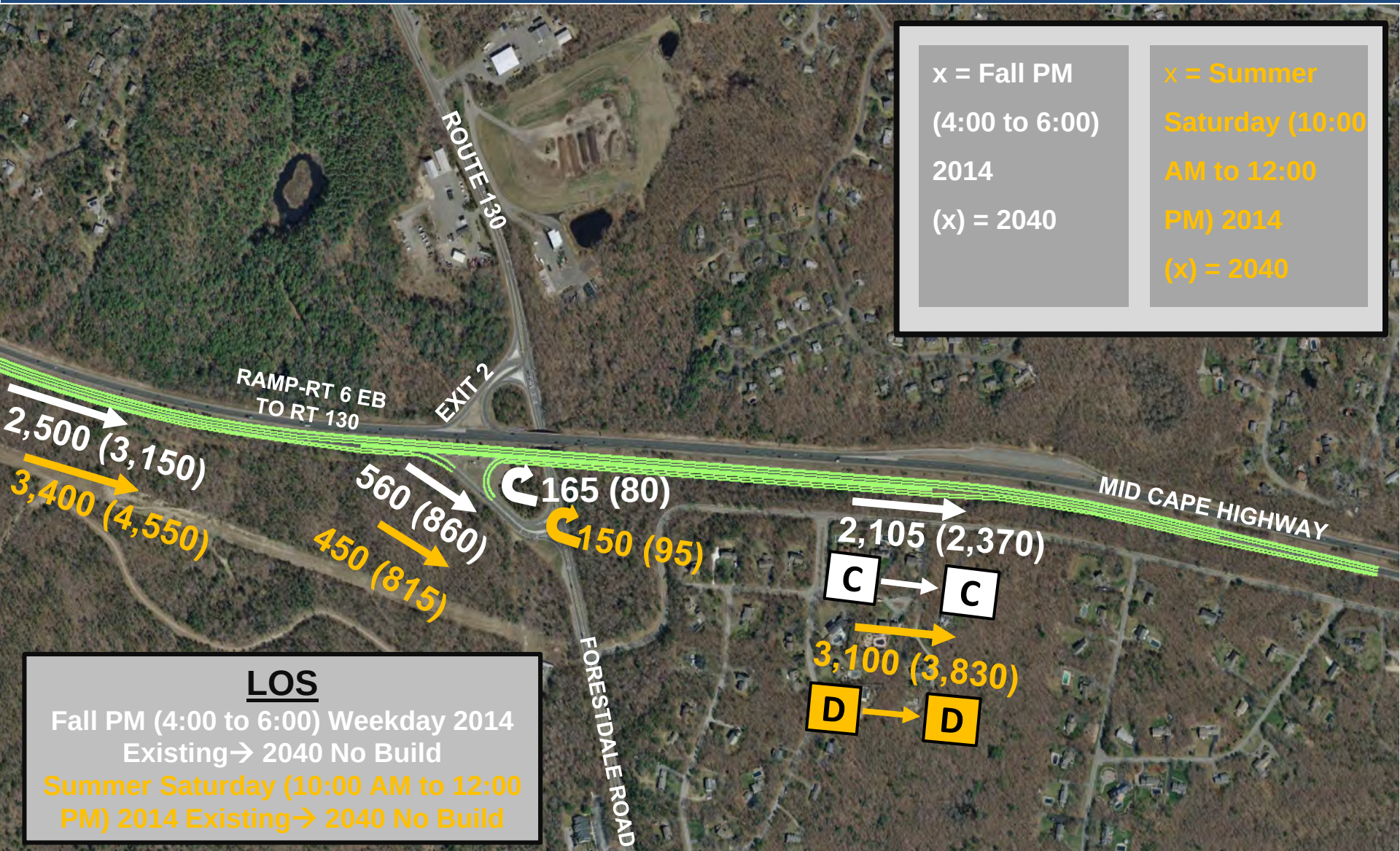
Route 6 Eastbound
Additional Travel Lane –
Existing Conditions vs Future Conditions.



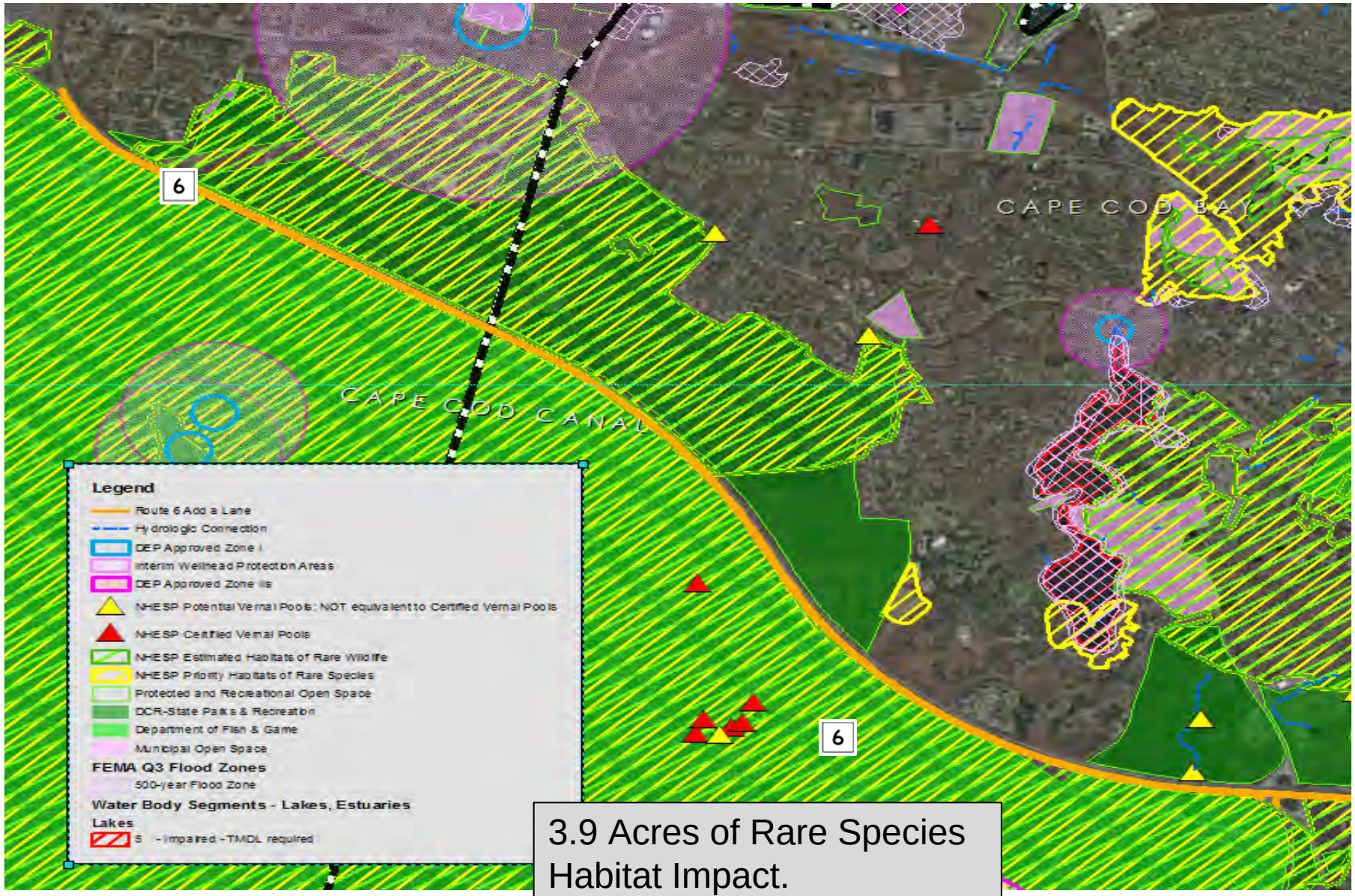
Route 6 Add-A-Lane (Northern End) 2014/2040 Peak Period Traffic Volumes.



Route 6 Add-A-Lane (Southern End) 2014/2040 Peak Period Traffic Volumes.



Route 6 Add-A-Lane
Potential Environmental Impact.



3.9 Acres of Rare Species Habitat Impact.



Questions?

Comments and feedback can be emailed to:

Ethan Britland- ethan.britland@state.ma.us.

Schedule and Next Steps.

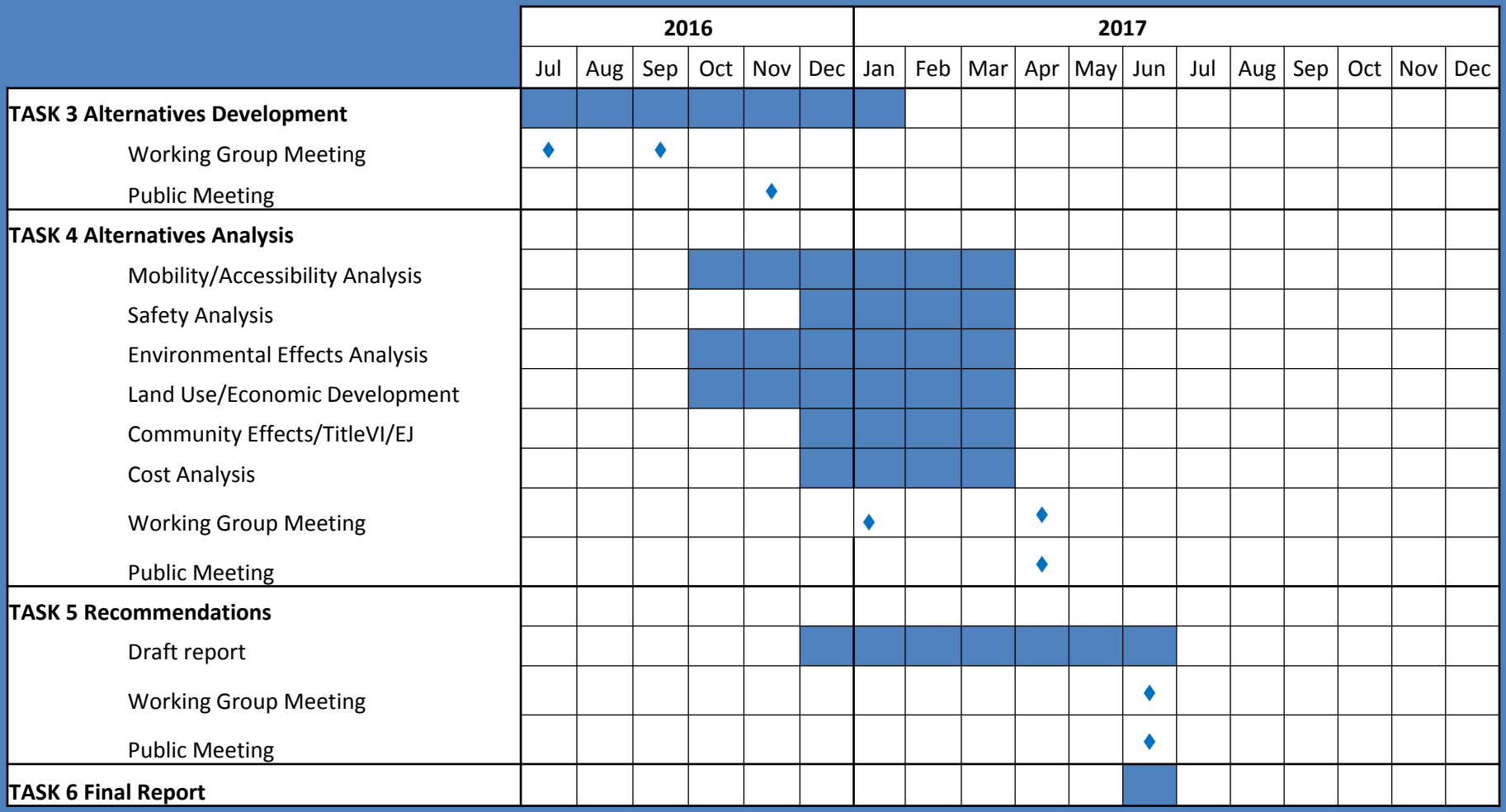


Next Steps.

- Evaluation of identified alternatives using Regional Travel Demand Model.

- Evaluation Matrix: Selected Improvements will also be evaluated based on:
 - Effectiveness.
 - Environmental Impact.
 - Community Disruption.
 - Property Impacts.
 - Cost.

Study Schedule.





Comments and feedback can be emailed to:
Ethan Britland- ethan.britland@state.ma.us.

End of Presentation.